

Owner's Enjoyment Manual

The BIJOU™
Seven Channel THX® Room Equalizer

AudioControl®
THEATER SERIES

Date Purchased _____

Dealer Name _____

Serial Number _____

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PRELUDE

Pop up some corn and get ready to be thoroughly wowed by your new THX® home theater system. Quality equalization makes the difference between an average system and a great home theater, and you have just taken a giant step toward completing your own movie palace. Movie theaters have racks full of equalizers to correct the performance of their sound system. The Bijou THX home theater room equalizer improves the sound of your entire system in the same way in a single, compact component.

Your new equalizer is made by the only consumer electronics company in the world that specializes in equalizers, signal processors and audio analyzers. AudioControl's passion for high quality, meticulous attention to detail and pro sound heritage shows itself in the dozens of awards we have won for our designs, products and service.

This manual is organized to help you get the most from your new equalizer. So, even though you're dying to try it out, please take twenty minutes or so to glance over this rhetoric and learn about the Bijou home theater equalizer. Anything that has this many sliders deserves all the explanation it can get.

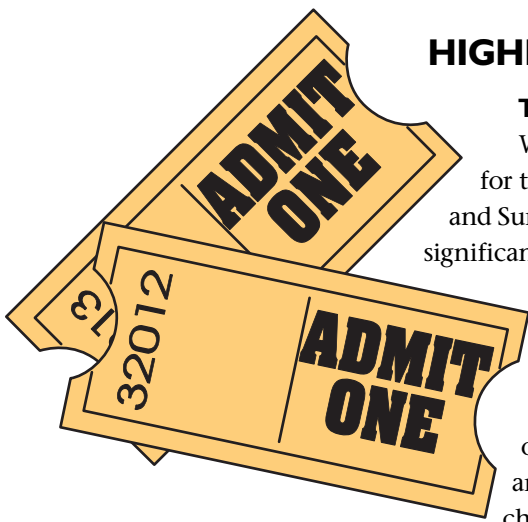
HIGHLIGHTS

THX® Home Theater Room Equalizer

With seven channels the Bijou provides total equalization for the entire home theater system: Front, Center, Subwoofer, and Surround channels. The Bijou THX room equalizer will significantly improve the frequency response and timbral accuracy of your system.

Easy-To-Set Graphic Equalization Controls

11 Bands of Constant-Q $\frac{1}{3}$ octave control for the Left, Center and Right Channels, 12 Bands of Precision $\frac{1}{6}$ octave adjustment for the two stereo subwoofer channels and 8 bands of dual-bandwidth eq for the stereo surround channels.



Room For The Future

Stereo surrounds and independent subwoofer channels ensure compatibility with newer digital 5.1 surround systems including AC-3.

Award-Winning Quality

Designed and built in the USA by AudioControl - an award winning manufacturer of high-quality audio components since 1977. The Bijou is backed up by a comprehensive FIVE year warranty.

THE MOST IMPORTANT INSTRUCTION OF ALL:

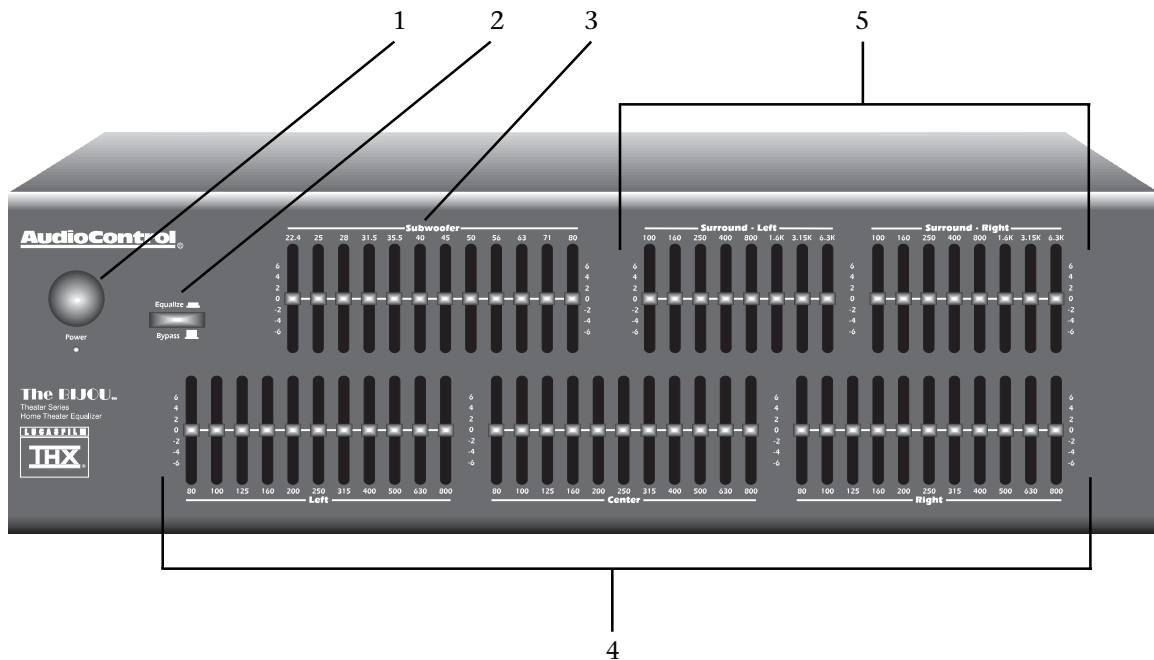
Fill out the warranty card and mail it to us. Also, record the serial number and put your sales receipt in a safe place. This is very important in the unlikely event that your new unit gets a sudden virus, or for proof of ownership if somebody takes a liking to your theater system in the middle of the night. Insurance companies have no sense of imagination when it comes to things like the Bijou ever being in your system.

This concludes the nagging section of this manual.

WHAT IS THX?

In 1980, Lucasfilm had a goal. They wanted the movie going public to experience the soundtrack as the film's director intended. The result was the **T**omlinson **H**olman **eX**periment (THX). The outcome of Tom Holman's research in film sound reproduction led to a unified system design approach that includes room acoustics, crossover design and loudspeaker placement. THX certification is a standard to which the components of a home theater system are designed. Some of the standards the Bijou had to meet for THX approval were:

- Standardized Input Sensitivity
- Ultra-Low Noise In Multi-channel Applications
- Ultra-Low Hum In Multi-channel Applications
- Constant-Q Design For Predictable Equalization
- Ultra-wide Dynamic Range

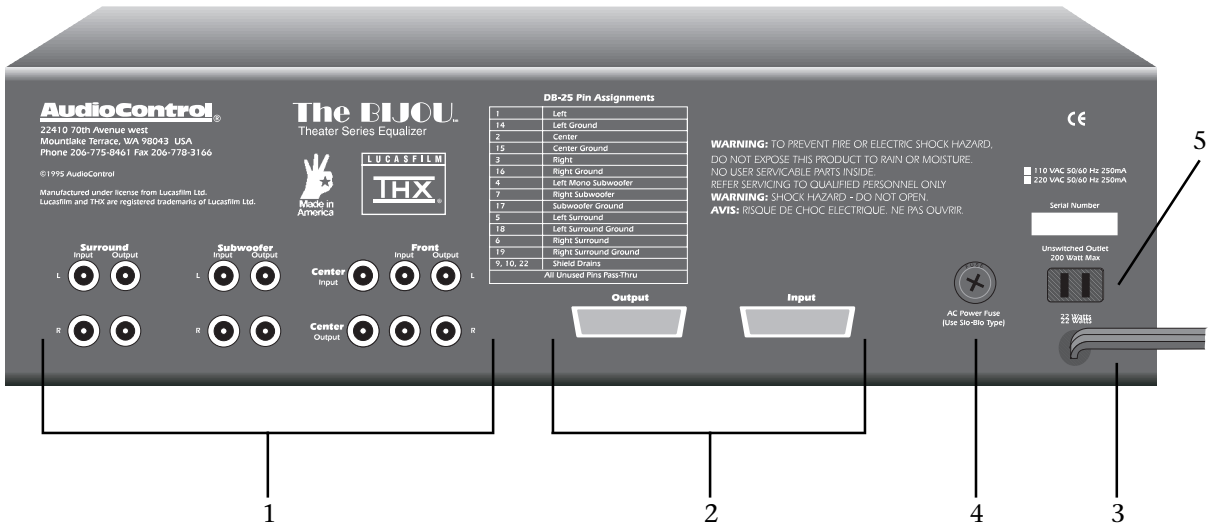


THE CAST

Front panel highlights

1. Power switch & LED
2. Equalizer Bypass
3. 12 band $1/6$ octave stereo subwoofer equalizer
4. 11 band $1/3$ octave left/center/right channel equalizer
5. 8 band dual-bandwidth stereo surround equalizer

An optional security cover is available from your authorized AudioControl dealer



Rear panel highlights

1. RCA Audio Connections
2. DB-25 THX Audio Connections
3. Power cord
4. Power fuse
5. Convenience outlet

FEATURES

Theater Quality Room Equalization

AudioControl has been designing and manufacturing the highest quality equalizers and sound processors since 1977. No other company has our expertise for bringing out the best possible sound from every audio system. The precision design of the Bijou gives the home theater aficionado professional control over the sound environment. We use only the finest components to ensure that you hear every subtle nuance of your favorite movie.

Constant-Q

The whole point of using an equalizer is to break the audio spectrum down into smaller bands to achieve precise control. Room resonances can be narrow “bumps” that no shelving bass tone controls will address. Crossover notches and other speaker design anomalies may be even more problematic. Thus one assumes that the more bands an equalizer has, the more accurate it is.

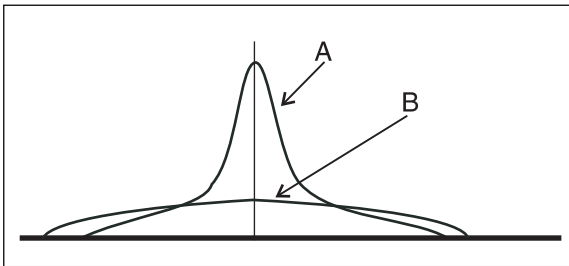


Figure 1 - Conventional Equalizer

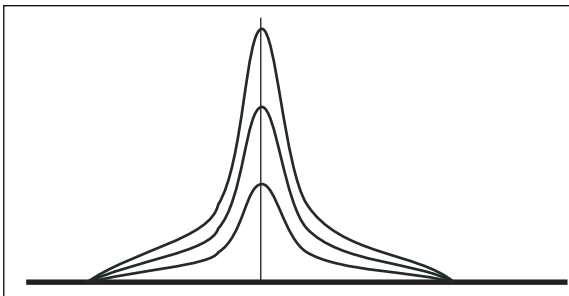


Figure 2 - Constant-Q Equalizer

Not correct. Few consumer electronics equalizers other than the Bijou truly can achieve dedicated boost or cut of *individual* tonal bands without muddling far more of the overall sound spectrum!

On conventional equalizers, the frequency points printed underneath each slider are optimistic. While they do affect the desired frequency; boost or cut also affects adjoining bands you may not want to adjust. Figure 1 shows how a conventional (non-constant-Q) equalizer can only achieve a specified bandwidth at one boost setting (A). When the amount of equalization is varied, so does the range of its effect (B).

Thus if you need a subtle correction at 250Hz, you must settle for correction at frequencies far removed from that point. Figure 2 shows the Bijou's corresponding Constant-Q adjustment. Note that even for small amounts of adjustment, the Bijou maintains its specified bandwidth. If you need 3dB of

boost at 250Hz, the Bijou provides it. With minimal effect on adjacent $\frac{1}{3}$ octave bands.

However, the benefits of Constant-Q extend farther than this. One rarely adjusts a single isolated $\frac{1}{3}$ -octave band. Rather, a close group of frequencies are most often shaped to address a wider frequency response anomaly. Figure 3 shows the effects of two adjacent adjustments with a conventional equalizer.

The Bijou's circuit design combines adjacent frequencies such that the result is a combination of the two adjustments, resulting in smooth bandpass characteristics (Figure 4).

Together, these Bijou refinements not only make adjustments more accurate but easier to make as well, since the visual "curve" derived from the slider positions closely reflects the actual response. And because interaction is minimized between adjoining controls, you can arrive at the desired settings faster without having to re-adjust a frustrating number of adjacent bands.

World's First Consumer One-Sixth Octave Equalizer

In the past your choices for precision equalization have been limited. You could choose a one-third octave graphic EQ, but some of the peaks can fall between the bands. Parametric equalizers let you get right on a specific point, but you are limited to one or two bands of adjustment; and a typical room can have five or more response bumps that need to be tweaked. The Bijou contains the world's first, consumer, one-sixth octave equalizer. This combines the narrow band control of a parametric equalizer with the ease-of-use of a graphic equalizer. Getting smooth, solid bass has never been this easy.

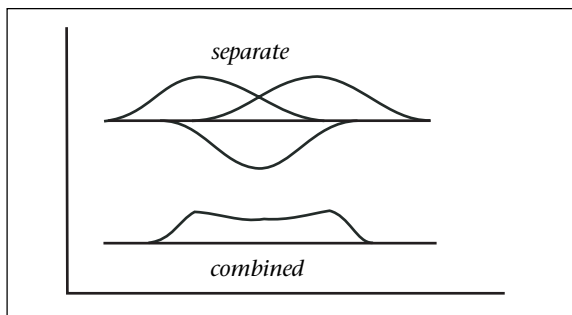


Figure 3 - Conventional

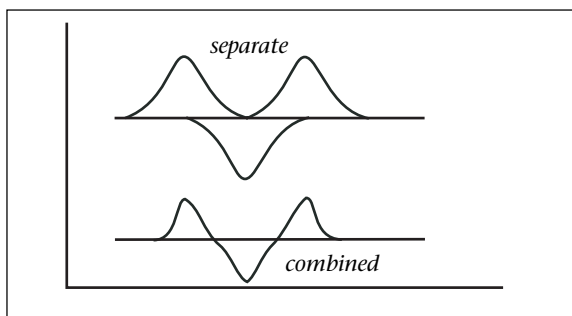


Figure 4 - Constant-Q Equalizer

SETTING THE STAGE - HOOKING UP THE BIJOU HOME THEATER EQUALIZER

Placement

The Bijou home theater equalizer can be placed almost anywhere in your audio stack. Make certain not to block the ventilation slots on any component. Also, avoid placing the Bijou directly over a large power amplifier. They can get pretty hot.

Power

A switched convenience AC outlet on the back of your receiver or preamplifier is the best place to power up the Bijou. What? You already have a laser disk player plugged into that outlet? No sweat. That's what the convenience outlet on the back of the Bijou is for. Plug the Bijou into the receiver; then plug the disk player into the Bijou. A laser disk player and the Bijou together don't begin to exceed the wattage rating for a switched AC outlet on a modern receiver.

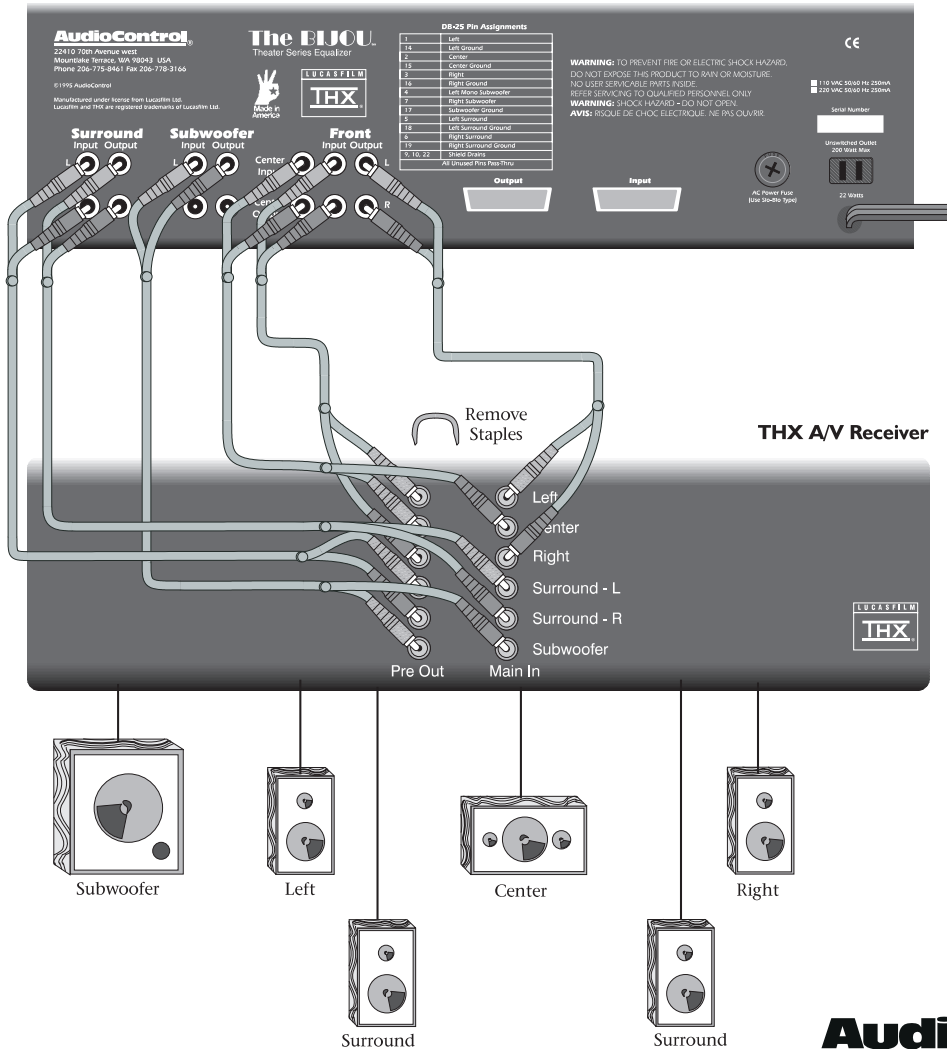
Connection Tips

If you're a hi-fi veteran, this part may seem repetitive, but some things can never be repeated too many times (just ask our Customer Support Department)!

- Turn off all components before making any connections and don't stand in a bucket of water.
 - When making connections, make sure that "left goes to left" and "right goes to right." The obvious and time-honored way to assure this is to assign RED plugs to Right and WHITE/GREY/BLACK plugs to the left (yellow is usually a video cable).
 - Whenever possible, keep power cords away from signal cables (i.e., inputs from disk players, VCRs, etc.) to prevent induced hum. Notice that we have placed the Bijou's power cord on the extreme right side. This helps you bundle all power cords down the right side of your stereo cabinet and all the signal cables down the left.
 - Use quality interconnect cables. We're not going to get into the debate about whether \$100 interconnects improve the sound of your system. We know from experience however that really, REALLY cheap connections can cause problems. They tend to disconnect inside, causing a hum or loss of signal.
-

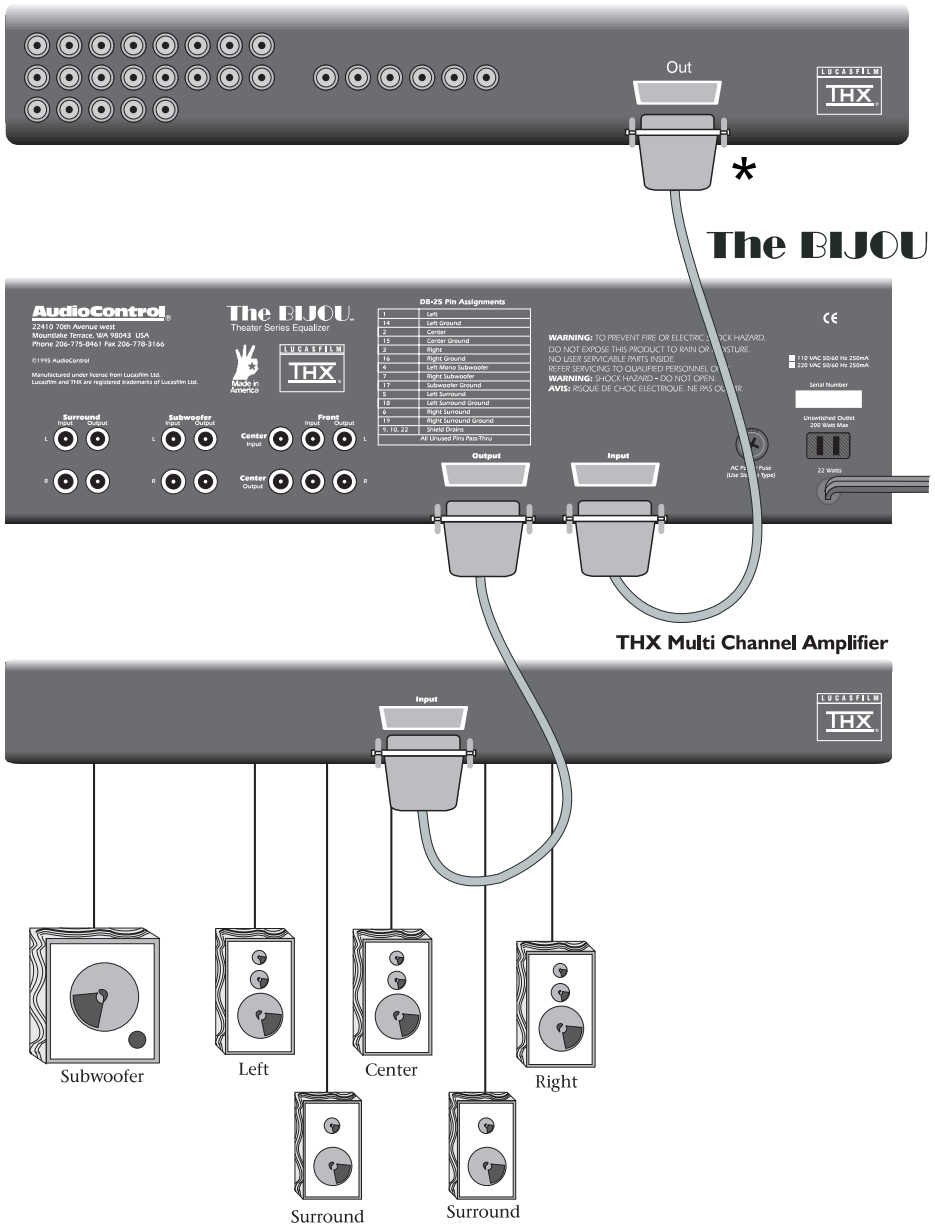
Five channel receiver system

The BIJOU



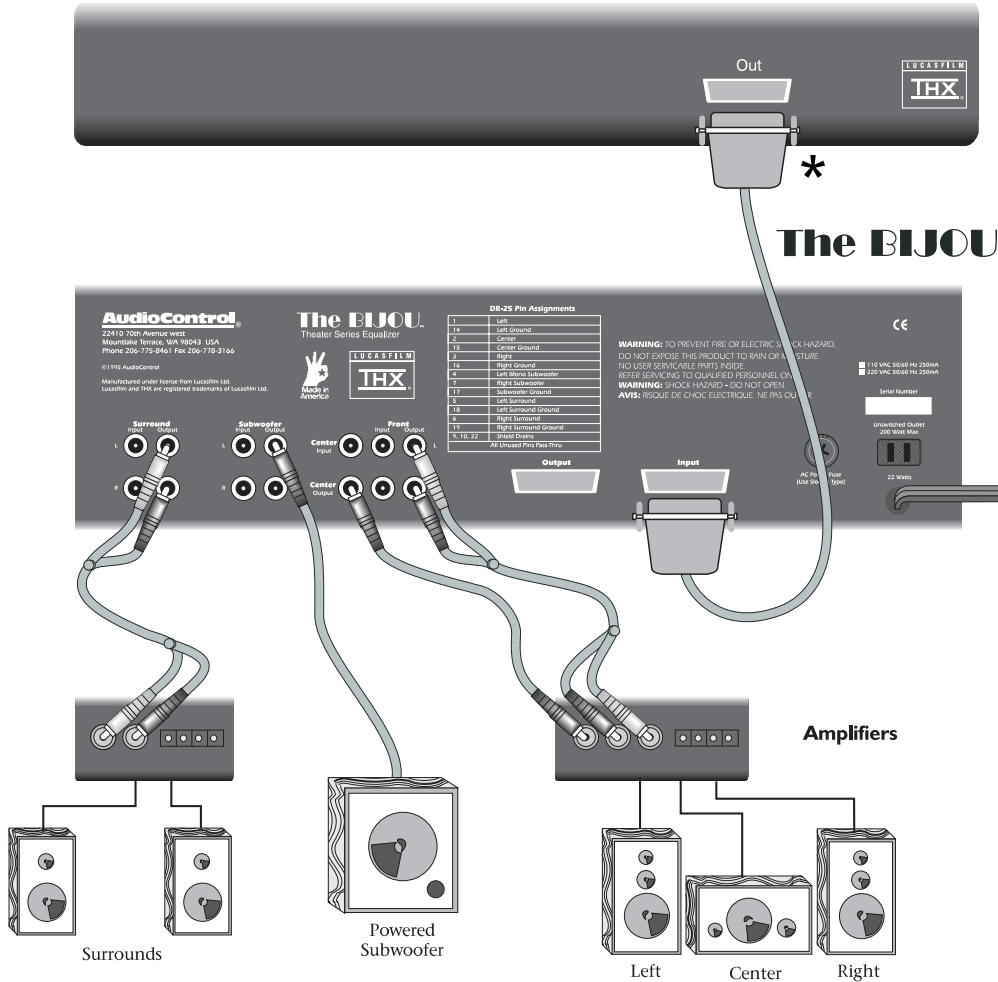
Five channel processor/amp

THX Processor



Digital AC-3 surround system

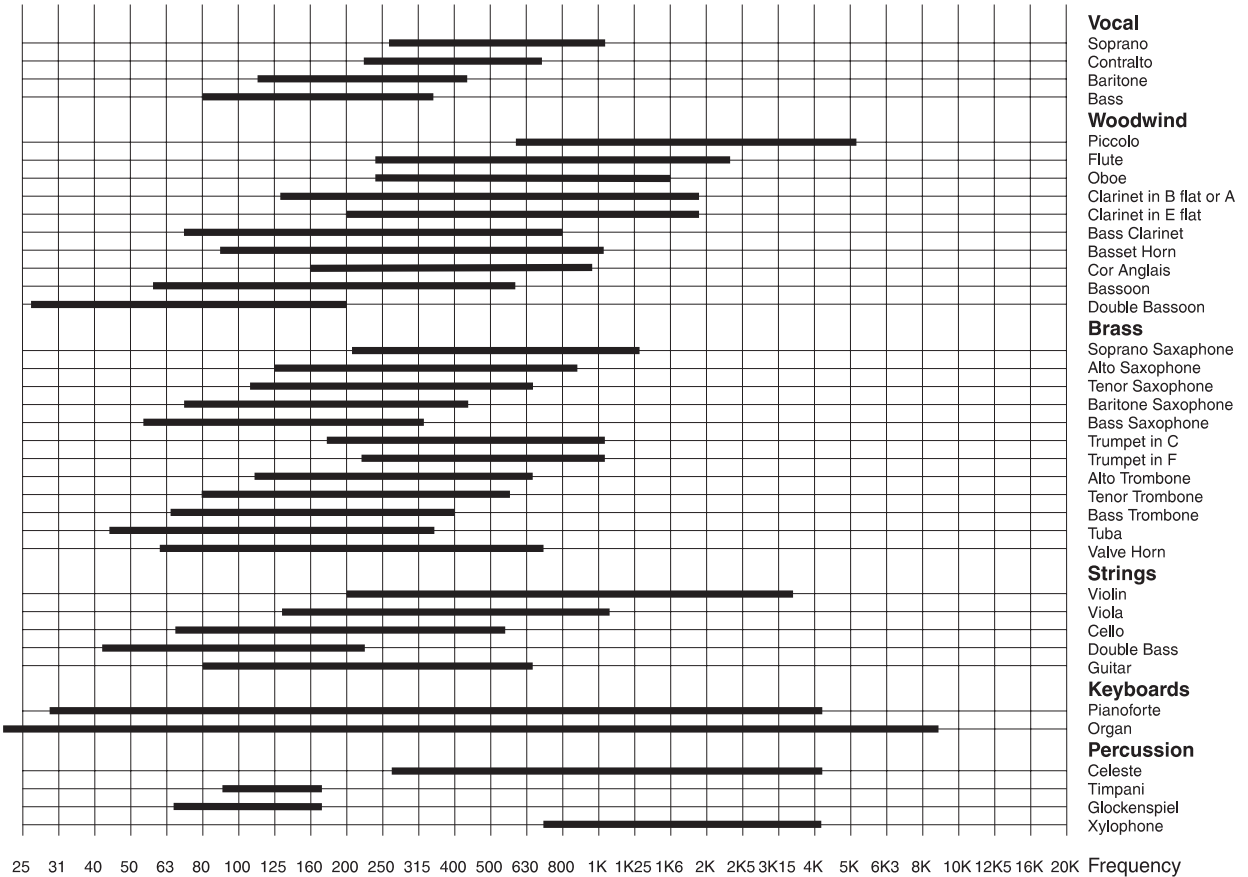
THX / Digital 5.1 Processor



***Note:** The RCA and 25 pin connectors are paralleled. You can use either or both for connecting the Bijou in the system.

Frequency range of musical instruments and vocals

25 31 40 50 63 80 100 125 160 200 250 315 400 500 630 800 1K 1K25 1K6 2K 2K5 3K15 4K 5K 6K3 8K 10K 12K5 16K 20K Frequency



MAKING IT EQUAL - GETTING YOUR HOME THEATER IN ORDER

There are three main areas of adjustment when optimizing a home theater sound system. They are:

1. Placement of speakers.
2. The acoustic environment of the room.
3. The system electronics with the Bijou home theater equalizer.

Work on items 1 & 2 before fine tuning with the Bijou. Here are some tips to get the most out of your speaker placement and acoustic environment.

Speaker Placement

We (and every speaker manufacturer we've ever talked to) can't over-emphasize the importance of proper speaker placement. Some speakers require very particular placement in relation to the back and side walls; all speakers demand careful placement in relation to your home theater's characteristics. Start by consulting the speaker's owner's manual and don't be afraid to experiment...a lot. Pull the speakers out from the walls. Toe them in. Move them closer or further apart. The variation in imaging and response that different placement can make is astonishing. Especially with the subwoofer.

The Acoustic Environment

Every room affects speakers differently. Reflective and absorbent surfaces, room shape and volume, even placement of furniture can significantly change a speaker's sound. If you have access to a high-quality real-time audio analyzer (we do make a couple of great one's if you're looking), it is very helpful while investigating various possibilities. Hint...For the best imaging, make certain that the midrange and tweeter speakers are at ear level.

Home Theater Equalization Procedure

Important Note:

If you are using dipolar surround speakers, make certain you are in the null area of the speakers when equalizing. The response will sound very different outside of the null area.

1. Have The Right Equipment

To properly equalize a home theater system you should have the following:

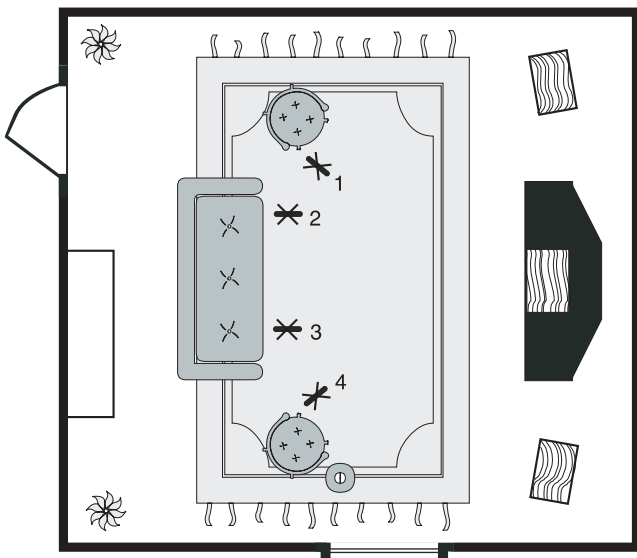
- A THX Room Equalizer (like the Bijou)
- A 1/3 octave real time analyzer (like The AudioControl Industrial SA-3050A)
- Pink Noise Test Disk (optional)
- Microphone Stand
- Masking Tape

2. Know Your Room

Equalization of the home theater should be done for the entire seating area as opposed to one specific location. Too often a system will be calibrated for a single listening position only to have people in the other listening positions suffer. Select at least three positions that will be indicative of where the audience will be sitting. Mark these with masking tape and note these in your documentation for future reference.

3. Microphone Placement

The CM-10 microphone that comes with the SA-3050A utilizes an omni-directional capsule, use a microphone stand to hold the microphone at ear height (sitting) in each of the listening positions. Don't place the microphone on the top of the couch or use a pillow to hold it, as this will affect the measurements.



4. Setting Levels

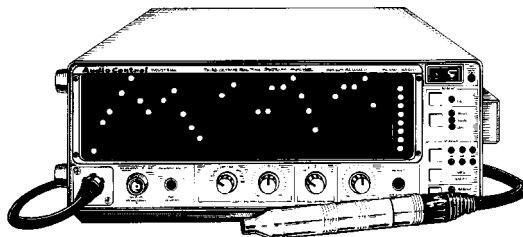
Put the SA-3050A into the digital SPL mode and match the output levels of the by using the output level controls in the surround controller. Use the surround test tone one channel at a time. The owner's manual of your surround processor will have more information on this.

5. Equalization Guidelines

The overall goal of equalizing a home theater is to have a smooth transition from one frequency to the next with no greater than 3 dB of variation. You also do not want to use your equalizer to re-invent the laws of physics and try and make a speaker do something it can't.

Although the audio police will not hold you accountable, you should follow some guidelines when it comes to making equalization corrections:

- Your equalization curve will be the inverse of what your analyzer displays.
- Cut the peaks before boosting the dips.
- If the analyzer shows a 3 dB bump at a given frequency, you should cut the frequency 3 dB.
- After making initial equalization adjustments, re-analyze the system and adjust again if necessary.
- When in doubt, re-analyze and re-equalize a particular speaker or group of speakers.



The AudioControl Industrial SA-3050A

What is a Real-Time Analyzer (RTA)?

A real-time audio analyzer is a test tool that allows you to graphically view the frequency response of a room. Unlike the bouncing lightshow seen on some inexpensive components, an RTA gives you some very useful information. The real-time audio analyzer consists of four main parts: 1) The test signal generator (pink noise) to play through the speakers, 2) A reference microphone to listen to the sound coming back from the speakers, 3) Bandpass filters to break up the audio spectrum into several smaller sections, and 4) A display (similar to the VU meters on your tape deck) that displays the volume level in each of the frequency bands. The curve shown on the display is the actual frequency response of the sound coming in through the microphone.

6. Left, Center, Right (LCR) Speakers

In this step you will want to measure the frequency response of each speaker at each listening position and then average them together to achieve a spatial average of the listening room. Set the SA-3050A display to 2 dB per step with the speed set on “averaging” (20 second averaging). The system volume level should be set at a reference position of approximately 90 dB and pink noise should be used as test material.

Starting with the center channel, use the following procedures:

- a) Take a measurement in each seating position and store them in memories of the analyzer.
- b) Average the measurements of each seating location.
- c) Following the “Equalization Guidelines”, make the appropriate equalization corrections to the frequency response.
- d) After making equalization corrections, repeat the above procedures.

After you have completed the above steps, repeat them for the left and right channels. Disconnect the channels you are not equalizing by unplugging the RCA connectors for the appropriate amplifiers.

7. Subwoofer Equalization

To measure and equalize the subwoofer you will want to follow the same procedures as you do for the LCR speakers. However, because of the omni-directional nature of bass at lower frequencies, it will not be necessary to take subwoofer measurements at all of the various seating locations.

8. Splicing The Subwoofer

There tends to be an occurrence of peaks or dips at the point where the subwoofer and the main LCR speakers overlap, generally around the crossover frequency (80 Hz). It is important to smooth out this transition point.

Center Speaker Splice: Disable all channels, except for the subwoofer and center channel. Play pink noise through them and use only the center channel equalization controls to smooth out the splice between the subwoofer and the center channel.

L & R Speaker Splice: Disable all channels except for the left, right, mains and the subwoofer. Play pink noise through them and use the left & right channel equalization controls to splice in the subwoofer.

9. Listening Test

When equalization of the system is complete, let your ears be the judge. If something doesn't sound right, go ahead and tweak the Bijou controls to your taste.

References

1. F.J. Ampel, "Home Theater Acoustical Problems and Equalization Solutions," AudioControl Technical Paper #108
2. Home THX Audio System Room Equalization Manual, Revision 1.5, Lucasfilm Ltd.
3. G.D. White, "The Audio Dictionary," Second Edition
4. F.E. Toole, "Listening Tests - Turning Opinion into Fact," J. Audio Eng. Soc., Vol. 30, No. 6., pp.431-445 (June 1982)
5. F.E. Toole, "Subjective Measurements of Loudspeaker Sound Quality and Listener Performance," J. Audio Eng. Soc., Vol. 33, No. 1/2, pp. 2-32, (Jan/Feb 1985)

Why Equalize?

1. Your receiver is insulting your intelligence. Manufacturers think that more than two knobs (bass & treble) will confuse you, so they deny you the ability to bring out the best in your system.

2. Your home theater room is special. Everyone's is. Speakers have to be designed to compromise for a wide range of listening environments. An equalizer can compensate for overly reflective or absorptive surfaces and help speakers perform their best.

3. Your speakers can do better. Everyone's can. An equalizer can help deepen the bass, smooth the midrange and extend high end frequency response. After buying a good equalizer, many movie lovers say it's like getting a new set of twice-as-expensive speakers. But for a lot less.

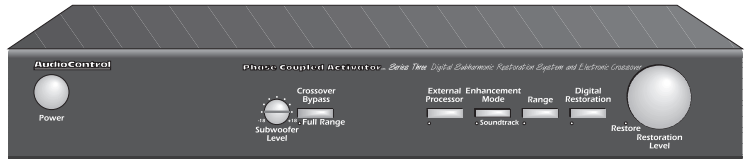
4. The source material isn't perfect. Did you know that bass is actually removed from many recordings so they sound good on smaller systems? Used properly, an equalizer can clean up many of these problems with the flick of a slider.

5. There's a company that specializes in 'Making good systems sound better'. AudioControl has been designing and building the highest quality equalizers and sound processors since 1977. Nobody else has put that much research and effort into the art of equalization.

Now Showing At A Dealer Near You

Phase Coupled Activator Series Three

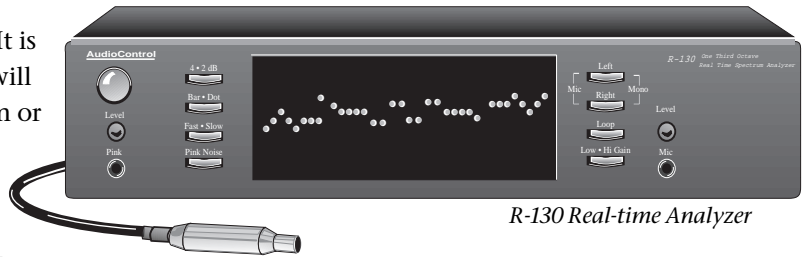
We're not exaggerating when we say the Phase Coupled Activator Series Three will completely blow you away with more low-end bass than you've ever thought possible from a home theater system. One magazine reviewer listened to it and said, "The Phase Coupled Activator makes music and video soundtracks more natural sounding and more fun." Frequently, customer warranty cards say, "I waited too long to get this."



Phase Coupled Activator Series Three

R-130 Real-time Audio Analyzer

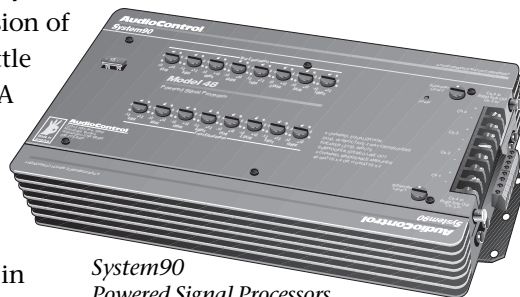
This is one of the flagships of the AudioControl home product line. It is the best that we could design and will complement any audiophile system or quality home theater. The R-130 is a one-third octave, real-time audio analyzer that allows you to see the acoustics of your listening environment and correct them.



R-130 Real-time Analyzer

System90 Powered Signal Processors

Great Sound, Less Space. The AudioControl System90 Powered Signal Processors bring the passion of great sound to any automobile. Life is full of little things (baby strollers, golf bags, groceries, etc.). A high-quality autosound system shouldn't take up all the trunk space you need to carry those necessities. Imagine: a high-efficiency power amplifier, a high-quality acoustics-matching equalizer and an audiophile-grade crossover all in one compact chassis that can be tucked away almost anywhere in your car. Now you're living.



*System90
Powered Signal Processors*

and now a word from the legal department...

The WARRANTY

People are scared of warranties. Lots of fine print. Months of waiting around. Well, fear no more. This warranty is designed to make you rave about us to your friends. It's a warranty that looks out for you and helps you resist the temptation to have your friend, who's "good with electronics", try to repair your AudioControl product. So go ahead, read this warranty, then take a few days to enjoy your new Bijou equalizer before sending in the warranty card and comments.



"Conditional" doesn't mean anything ominous. The Federal Trade Commission tells all manufacturers to use the term to indicate that certain conditions have to be met before they'll honor the warranty. If you meet all of these conditions, we will warrant all materials and workmanship on the Bijou equalizer for five (5) years from the date you bought it, and we will fix or replace it, at our option, during that time.

Here are the conditional conditions:

1. You have to fill out the warranty card and send it to us within 15 days after purchasing the Bijou equalizer.
2. You must keep your sales receipt for proof of purchase showing when and from whom the unit was bought. We're not the only ones who require this, so it's a good habit to get into with any major purchase.
3. The Bijou equalizer must have originally been purchased from an authorized AudioControl dealer. You do not have to be the original owner, but you do need a copy of the original sales slip.
4. You cannot let anybody who isn't: (A) the AudioControl factory; (B) an authorized service center; or (C) somebody authorized in writing by AudioControl to service the Bijou equalizer. If anyone other than (A), (B) or (C) messes with the Bijou equalizer, that voids your warranty.

5. The warranty is also void if the serial number is altered or removed, or if the Bijou equalizer has been used improperly. Now that sounds like a big loophole, but here is all we mean by it:

Unwarranted abuse is: (A) physical damage (don't use the Bijou equalizer to level your projection TV); (B) improper connections (120 volts into the RCA jacks can fry the poor thing); (C) sadistic things. This is the best product we know how to build, but if you strap it to the front bumper of your Range Rover, something might break.

Assuming you conform to 1 through 5, and it really isn't all that hard to do, we get the option of fixing your old unit or replacing it with a new one.

Legalese Section

This is the only warranty given by AudioControl. This warranty gives you specific legal rights, and you may also have rights that vary from state to state. Promises of how well the Bijou equalizer will work are not implied by this warranty. Other than what we've said we'll do in this warranty, we have no obligation, express or implied. We make no warranty of merchantability or fitness for any particular purpose. Also neither we nor anyone else who has been involved in the development or manufacture of the unit will have any liability of any incidental, consequential, special or punitive damages, including but not limited to any lost profits or damage to other parts of your system by hooking up to the unit. Whether the claim is one for breach of warranty, negligence of other tort, or any other kind of claim. Some states do not allow limitations of consequential damages.

Failure to send in a properly completed warranty card negates any service claims.

The warranty included with the unit shall supersede this plain-text version, if there is any inconsistency between the two.

Important Note:

New area code as of February 1997:

Phone 425/775-8461

Fax 425/778-3166

What to do if you need service

First, contact AudioControl, either by phone 425/775-8461 or FAX 425/778-3166. We'll verify if there is anything wrong that you can fix yourself, or arrange to have it sent back to our factory for repair. Please include the following items with the returning unit:

- 1) A copy of your proof of purchase (that sales receipt we've been harping about). No originals please. We cannot guarantee returning them to you.
- 2) A brief explanation of the trouble you are having with the Bijou. (You'd be surprised how many people forget this.)
- 3) A return street address. (No PO Boxes, please)
- 4) A daytime phone number in case our tech has a question about the problem you are having.

You're responsible for the freight charges to us, but we'll pay the return freight back. We match whatever shipping method you send it to us, so if you return the unit overnight freight, we send it back overnight. We recommend United Parcel Service (UPS) for most shipments.

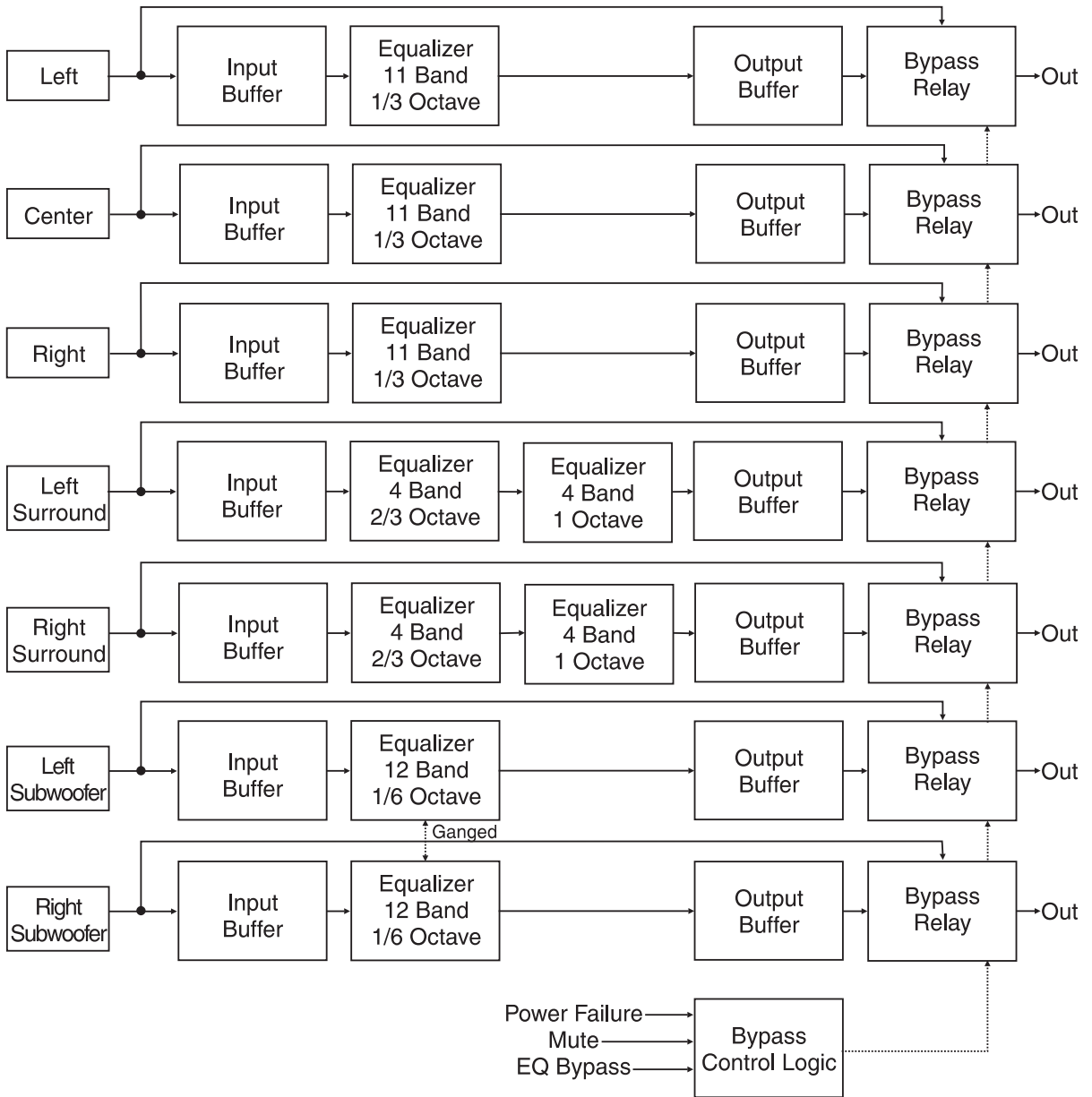
DB-25 Pin Assignments

1	Left
14	Left Ground
2	Center
15	Center Ground
3	Right
16	Right Ground
4	Left /Mono Subwoofer
7	Right Subwoofer
17	Subwoofer Ground
5	Left Surround
18	Left Surround Ground
6	Right Surround
19	Right Surround Ground
9, 10, 22	Shield Drains
All Unused Pins Pass-Thru	

Note:

The RCA and 25 pin connectors are paralleled. You can use either or both for connecting the Bijou in the system.

BLOCK DIAGRAM



CREDITS

(specifications)

Number of channels	7
	(L,C,R,Sub _L ,Sub _R ,Surround _L ,Surround _R)
Frequency response	20-20kHz +0, -25dB
Total harmonic distortion	0.01%
Signal to Noise ratio (ref. 1v, A-WTD).....	109 dB
Maximum output level	6 Vrms
Equalizer Boost/Cut Range	±6 dB
Equalizer type	Constant-Q
Input Impedance	85 kilohms
Output Impedance	50 ohms
Crosstalk	<70dB @ 1kHz
Power draw	22 Watts
Size	4.75"h x 11"d x 17"w
	(19"w with optional rackmounts)
Weight	12 lbs
Country of origin	USA
Warranty.....	5 Years

The EPILOGUE

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Good Stereo Sound Better are
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The Bijou, Phase Coupled
Activator, System90 are trade-
marks of Electronic Engineering
and Manufacturing, Inc.

All other registered or unregis-
tered trademarks are the prop-
erty of their respective compa-
nies.

THX is a registered trademark of
Lucasfilm Ltd.

This manual was written,
designed, and printed while
fighting a life-and-death struggle
with giant banana slugs and
drinking a double-grandé, vanilla
latté espresso.

AudioControl®

making good stereo sound better®

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