

SOUNDSTREAM[®]

T E C H N O L O G I E S



Agenda



Company History



Product



Install Tips



Soundstream History 101

- 1984: Donna Haas and Lee Adams acquire *Soundstream* name and create *Soundstream Technologies*.
- Lee Adams is the Managing Director





Soundstream History 101

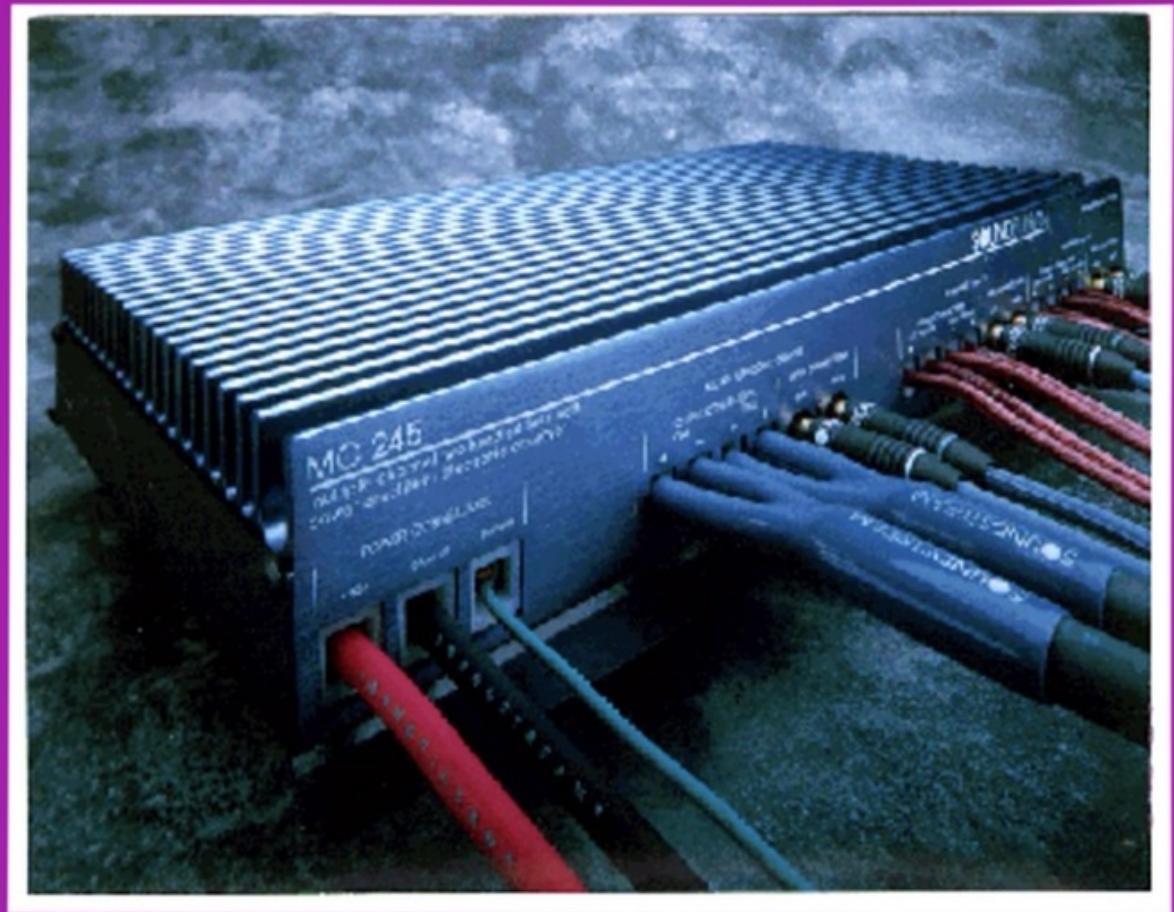
- 1985 WCES:
D200 amplifier
and head units





Soundstream History 101

- **1989:**
Soundstream
introduces Series
II amplifiers





Soundstream History 101

- **1989:**
Soundstream
Headquarters
move to
Folsom,
California





Soundstream History 101

- 1993:
Soundstream introduces the new generation of REFERENCE amplifiers and subwoofers



The Class A 100W
reference amplifier
features:

- Full power, Full Class A output
- 100 Watts into 4 Ohms Load
- 4 pin gold plated connectors
- Bi-polar, Full Class A output
- 100 Watts into 4 Ohms Load
- 4 pin gold plated connectors
- Full power, Full Class A output
- 100 Watts into 4 Ohms Load
- 4 pin gold plated connectors
- Bi-polar, Full Class A output
- 100 Watts into 4 Ohms Load
- 4 pin gold plated connectors

SOUNDSTREAM
CLASS A 100W



Soundstream History 101

- 1995 WCES:
Soundstream
introduces 2nd
generation REFERENCE
amplifiers; SPL woofers





Soundstream History 101

- 1997 WCES:
Soundstream
introduces
DaVinci, SPL
& Exact
Loudspeakers





Soundstream History 101

- 1998 WCES: Introduction of Rubicon amplifiers and woofers
- New manufacturing facility is completed





Product





World Class Amplifiers

- **Criterion**
- **Rubicon**
 - **Pure Class A**--Audiophile and Obscene SPL



Criterion Amplifier

DaVinci





DaVinci

- **Limited Edition 7 channel amplifier**
- **24 kt gold plating**
- **4/3/2 way crossover**
- **Fully Balanced Inputs**
- **Includes gold-plated BLT4**
- **1/0 power & ground connections**
- **Variable Fan Cooling**
- **LSE.Q**



Rubicon Model Designations

1002

**base
number =
total max
RMS output**

**last digit =
number of
channels**

1000 watts maximum output

2 channel amplifier



Rubicon Amplifier Line

Design Parameters

- ◆ Bullet-Proof Reliability
- ◆ Sound Quality Improvements
- ◆ Cutting Edge Design
- ◆ Improved Value



Rubicon--Construction



- All connections on one side
- 4 GA. direct-in power and ground (most models)
- 6 GA. speaker
- component layout
- 1% metal film resistors, dual mono pots



Rubicon Amplifiers--R.U.B.I.

- ◆ Rapid-Use Branched Impulse Power Supply
- ◆ Eliminates “Power Sags” during low frequency reproduction by INCREASING THE DUTY CYCLE, thus stabilizing the power supply, and allowing it to deliver maximum power.
- ◆ Reserve gate power is now stored for low voltage scenarios due to extreme low battery voltage conditions



TRIDENT PROTECTION

1. OUTPUT PROTECTION
2. GROUND FAULT DETECTION
3. THERMAL PROTECTION



Rubicon--Hawkins Bass Control

Provides subwoofer boost and directs otherwise wasted amplifier power to audible bandwidth.

- PARAMETRIC
- VARIABLE
- FIXED



Rubicon--Hawkins Bass Control

VERSIONS/FEATURES

	Q	Frequency
Parametric	0.7 – 2.8	14 – 56 Hz
	0 - +9 dB	
Variable	0.7 – 2.8	45 Hz
	0 - +9 dB	
Fixed	+6 dB	45 Hz



Rubicon--Drive Delay Muting

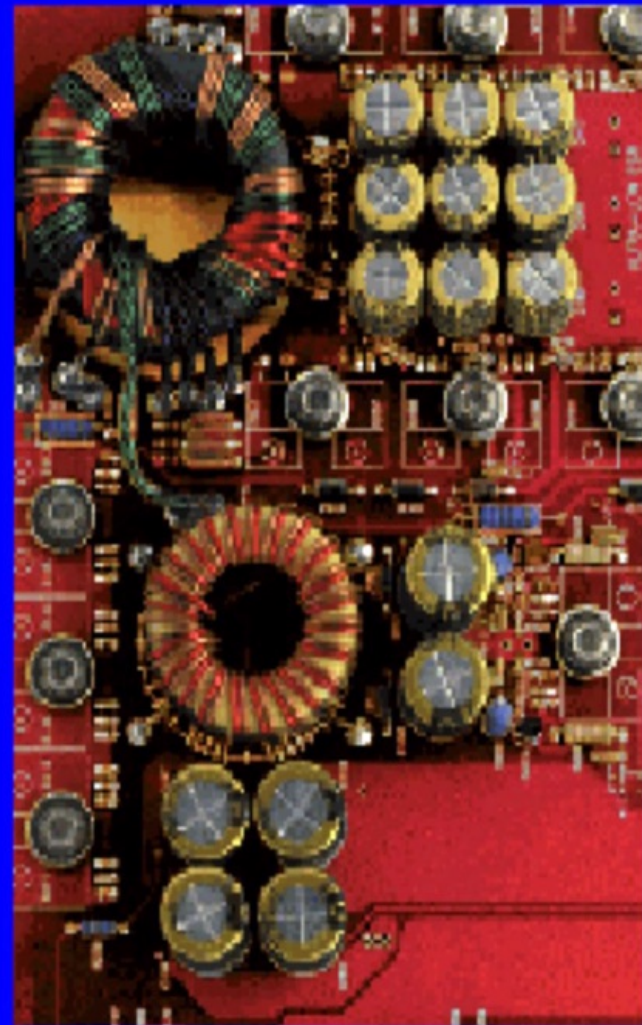
Eliminates amplifier and non amplifier-induced turn on and off pops.

- ◆ **Amplifier section powers up 2-3 seconds after power supply.**
- ◆ **Power supply powers down 2-3 seconds after amplifier section.**



Rubicon--Power Grid

- **More power *in and out faster***
- **Power Grid is now evenly distributed between the primary and the secondary**
- **Puts power where it's needed providing improved RF filtering and greater dynamics**
- **BETTER DYNAMICS!**



Rubicon--High Current

- Selectable power supply rails
- 2 Amps in 1
- Automatic on select models
- Non-Obsolescence!
- **NOW!** Produces Max Power @ 4 ohms Mono as well as 2 ohms Mono!



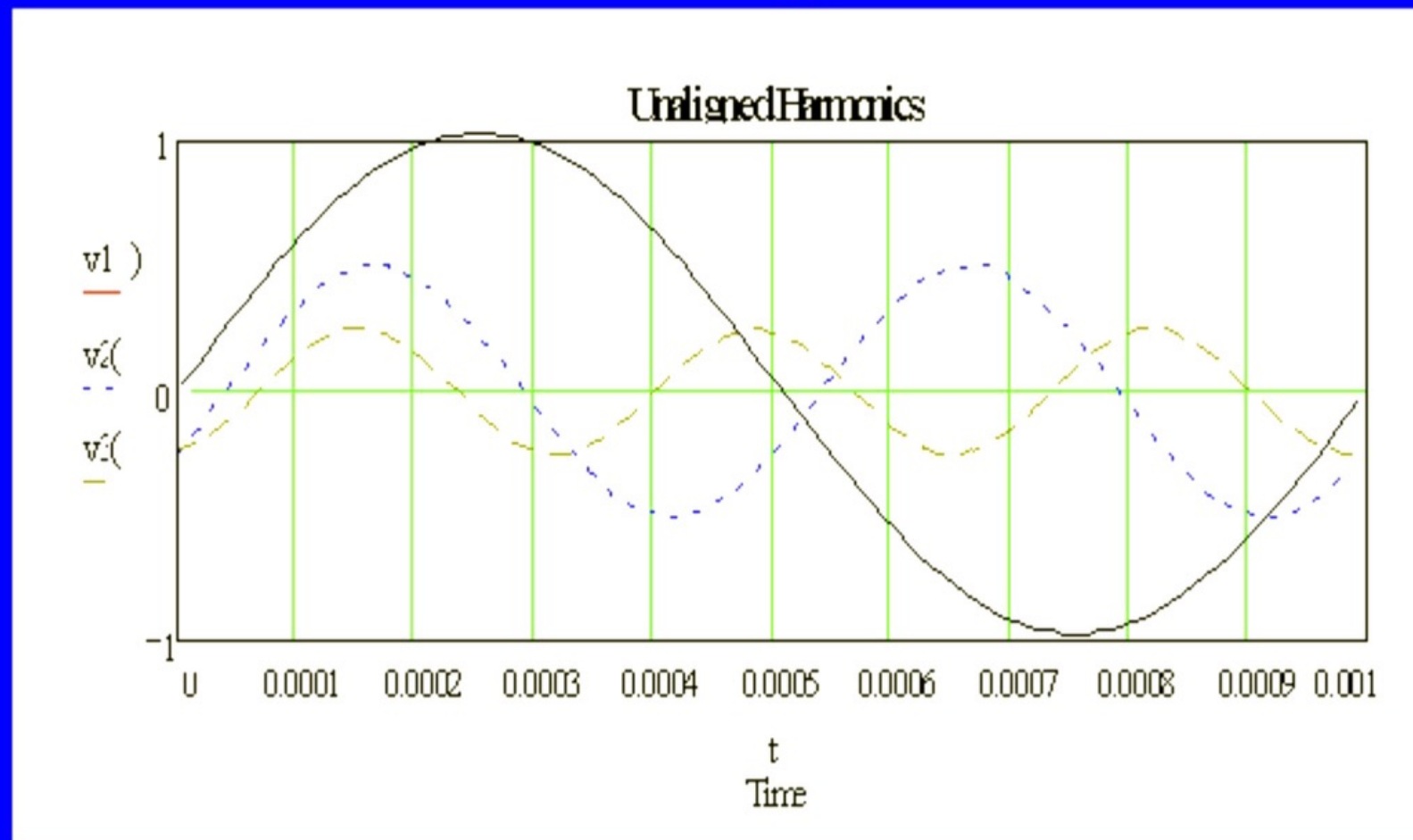


Harmonic Bass Alignment

- ◆ 2nd and 3rd order harmonic peaks are critically aligned with the fundamental peaks at low frequencies.
- ◆ RESULT--Improved low frequency bass response, tighter stronger bass.

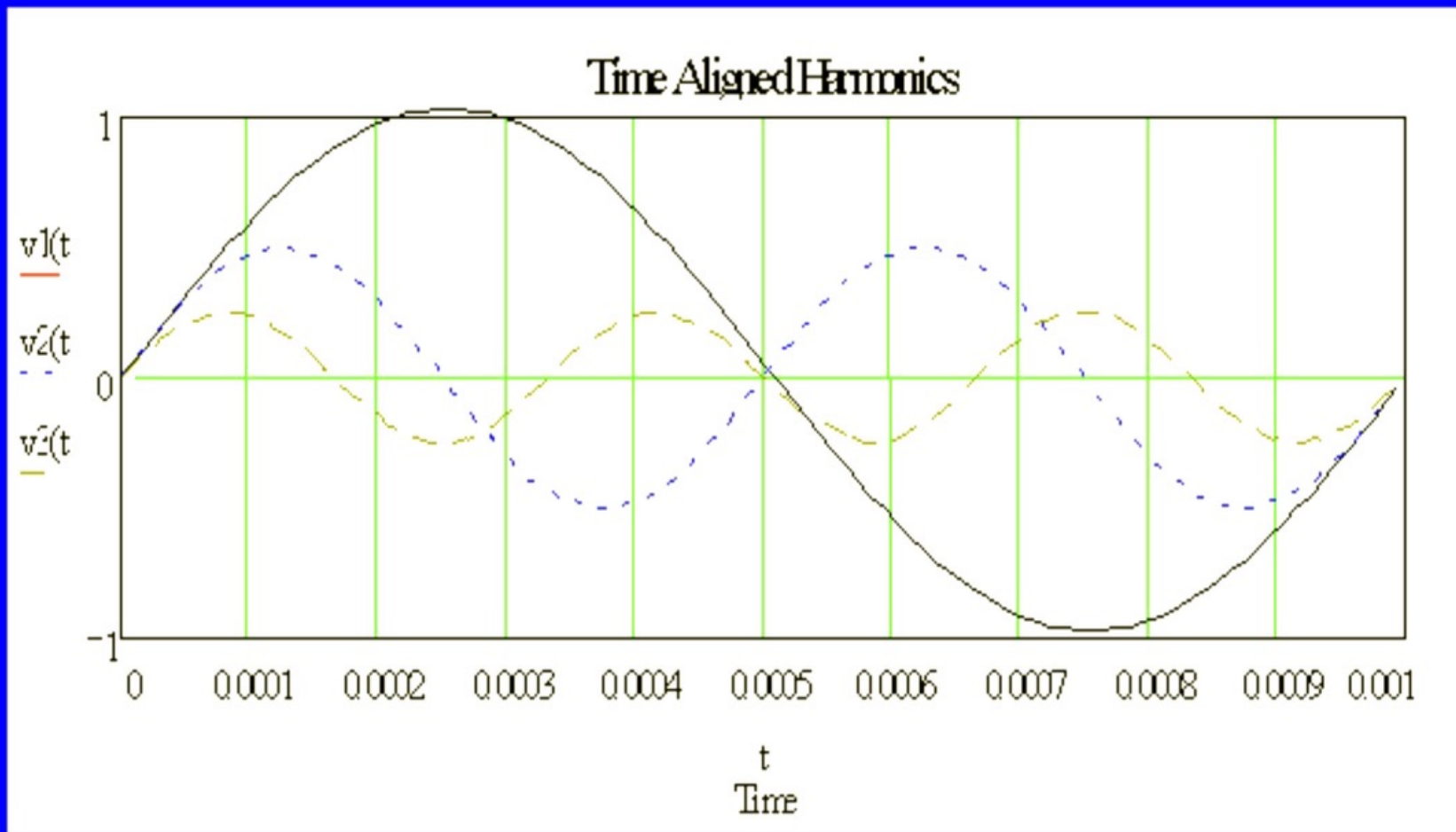


Harmonic Bass Alignment





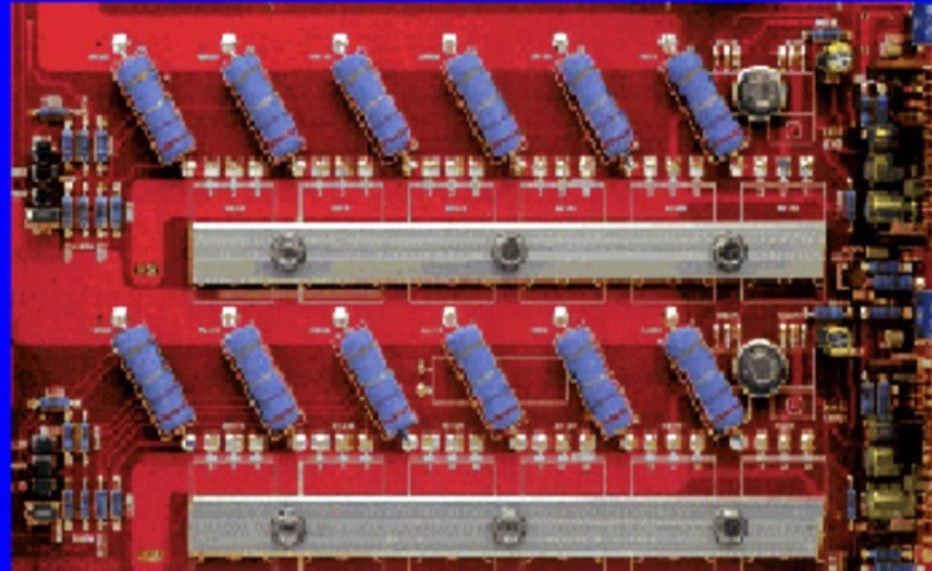
Harmonic Bass Alignment





Rubicon--D.P.A.

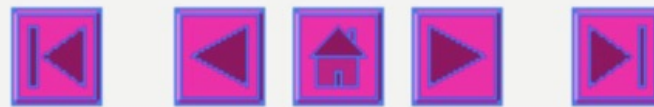
- Darlington
Power
Array
- Darlington v.
MOSFETs
- Array
- Chassisink





Rubicon Pure Class A

- **Superlative Sound Quality (*R.F.S.* technology)**
- **Obscene Output (*R.F.L.* technology)**
- **Polished Aluminum Finish w/ chrome bottom plates**



Rubicon Pure Class A



Class A 10.2
2 channel amplifier

- Astounding fidelity at higher impedances (2 ohms +)
- Potentially dangerous power at low impedances



Rubicon Pure Class A



Class A 5.2
2 channel amplifiers

- 0.25 wpc @ 4 ohms, 12.6 volts
- 500 wpc @ 2, 1, or 0.5 ohms mono

"Sleeping Beauty"



Rubicon Pure Class A

Class A Picasso/Renoir

The **ULTIMATE** 4/2 channel audiophile amplifiers

- **OP275** Pre amplification
- **Polypropylene Capacitors**
- **Designed to drive satellite speakers ONLY**





Subwoofers--Philosophy

- Soundstream is the Lingenfelter of the woofer business.
- QC is conducted by the designers--most companies' designers don't get involved
- SST's designers personally see failed product and make changes accordingly
- [relatively] small manufacturing & purchasing is able to "turn on a dime" better than huge companies
- product designed to maximize dealer sales & profitability through performance & reliability



Subwoofers --Series

- **EXACT--audiophile, hard-core excursion**
- **SPL--just like the name says....**
- **Rubicon--bang for the buck, do it all woofer**



Exact Woofers--10, 12

- Sound Quality
- Excursion 1.74" w/ Exact10
- Copper Clad Polepiece
- Cast Frame
- Kevlar-reinforced Cone
- Single 4 Ohm Voice Coil





SPL Subwoofers

NEW!

- new **MULE**
- increased versatility
(except MULE)
- GARGANTUAN
domes act as cooling
pistons--1 mm thick!
- E-coat

Vs 1997 product...

- greater torsional rigidity for
more accurate tonal
characteristics and sensitivity
- deeper low frequency response
- greater power handling
- flat spiders for better linearity
- new cones
- new custom "roll" surround
- work in same or smaller
enclosures
- more excursion for more
potential output





SPL Subwoofers--10, 12, 15, 170

NEW!

- High Output
- Stronger low freq. output
- Dual 4 Ohm Voice Coils
- High temperature componentry



NEW!



SPL Subwoofers--MULE

- “BANDPASS-
IN-A-SEALED-
BOX” Woofer
- 40 - 80 Hz
RESONANCE
- 0.745 ft cubed
sealed
enclosure





Rubicon Subs--10, 12, 15

- All types of music
- Competitively priced
- All types of enclosures
- e-coat
- Single 4 Ohm voice coil





Soundstream Loudspeakers

- **EXACT**

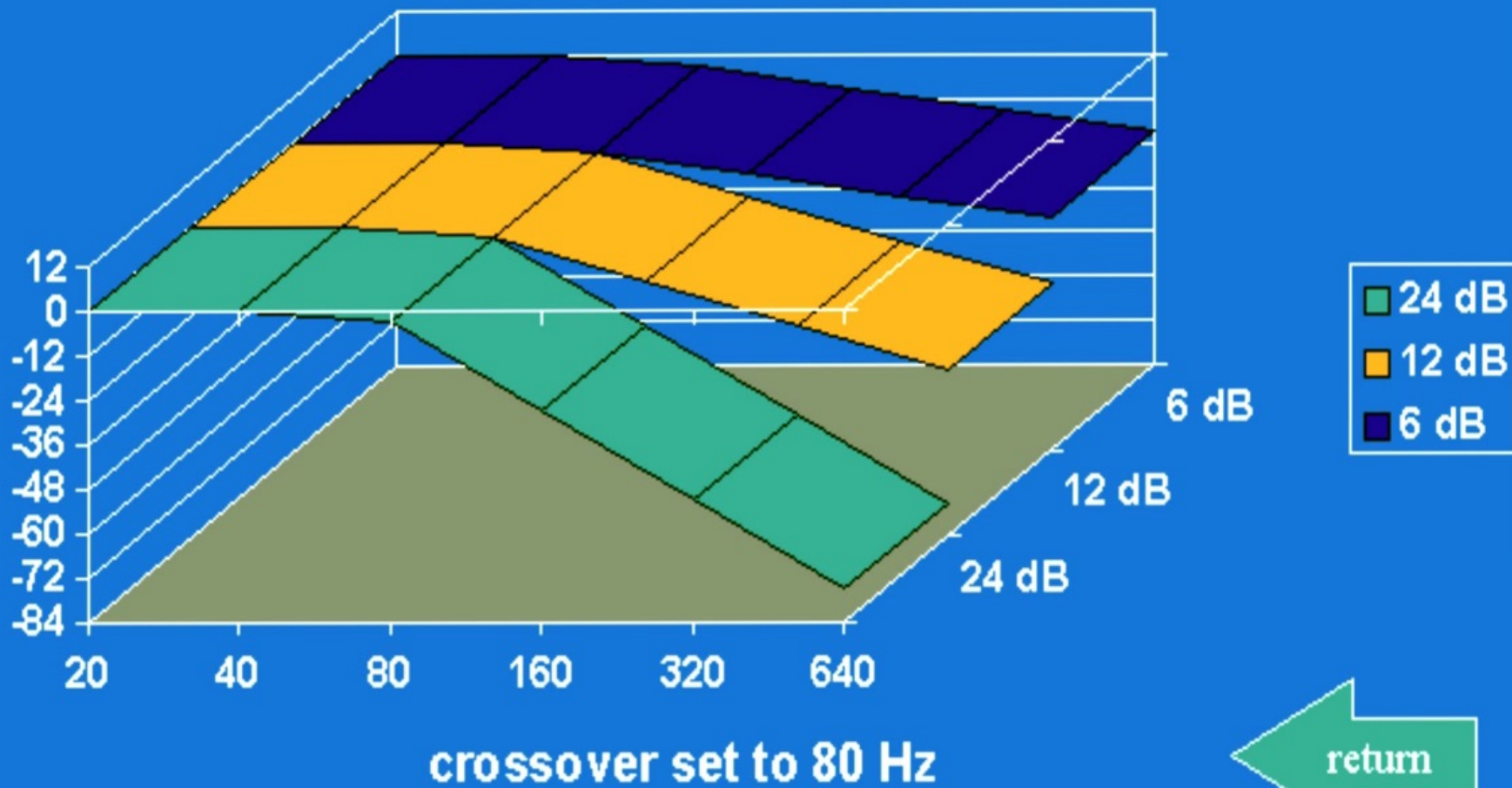
- Separates--6.3, 5.3, 4.3
- Coaxials--6.2, 5.2, 4.2
- Wizzer--4.0

- **SPL**

- Separates--60, 50, 40
- Coaxials--65, 55, 45



Crossover Slopes





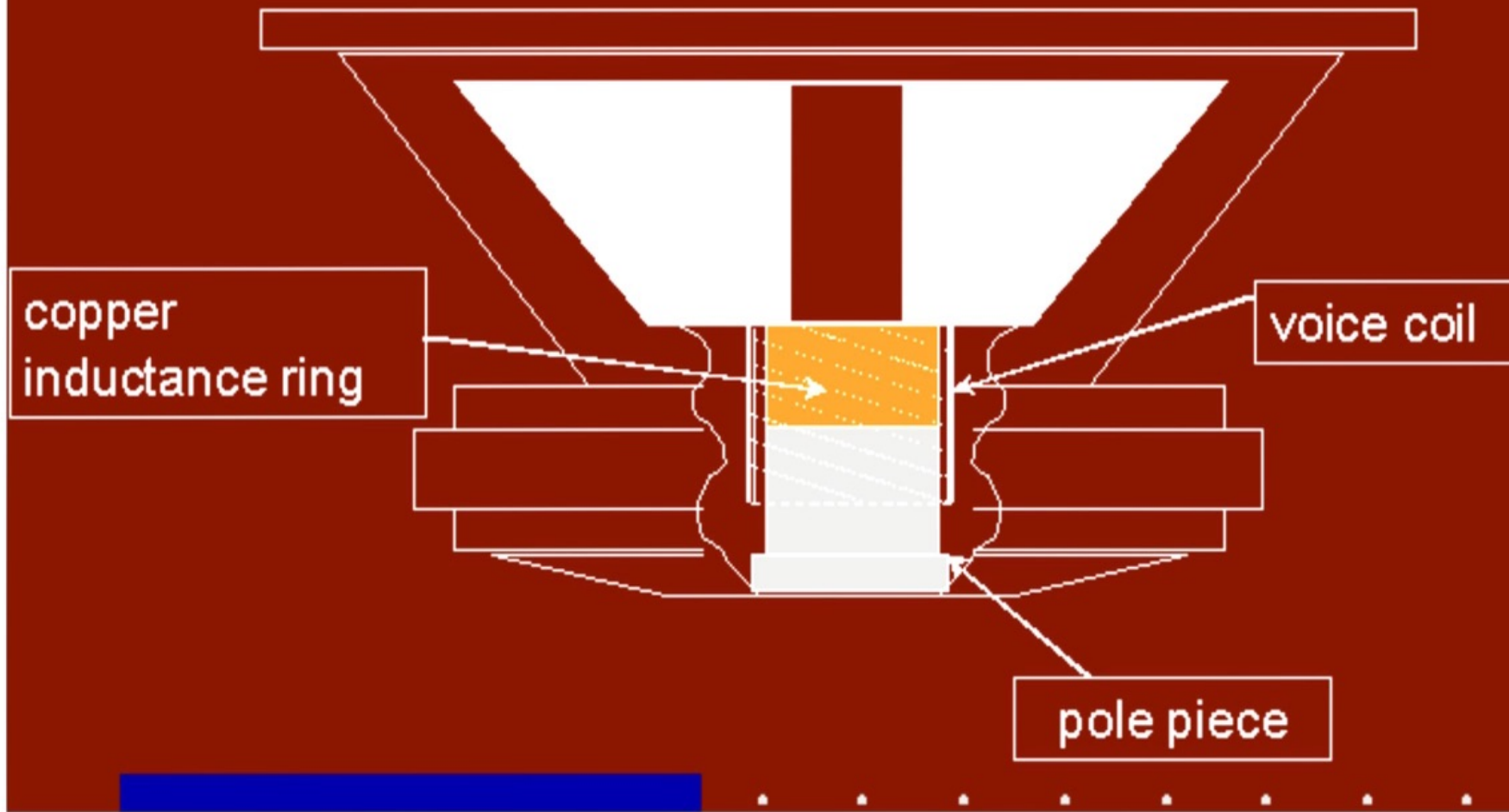
EXACT Passive Crossover



- 24 dB/oct (18 elec., 6 acoustic)
- 3 position tweeter level
- Zobel networks (defeatable)
- Mylar capacitors
- 2-stage tweeter protection



EXACT--Copper Inductance Ring





Exact--It's in the Copper

- **Copper “cap” on the end of the polepiece**
- **Reduces voice coil inductance**
- **Extends high frequency response**
- **Lowers high frequency distortion**
- **Increases power handling**



EXACT Separates

- **Copper Inductance Ring**
- **24 dB/octave crossover**
- **1" soft dome tweeter**





EXACT Coaxials & Wizzer



- **Copper Inductance Ring**
- **24 dB/octave crossover**
- **1" soft dome tweeter**



SPL Loudspeakers

- World's **FIRST**
2 Ohm
Loudspeakers!
- 24 dB/octave
crossovers
(separates)





Processors & Crossovers

- **Balanced Transmitters**
- **Crossovers**
 - Balanced X.0--Chrome & Blue



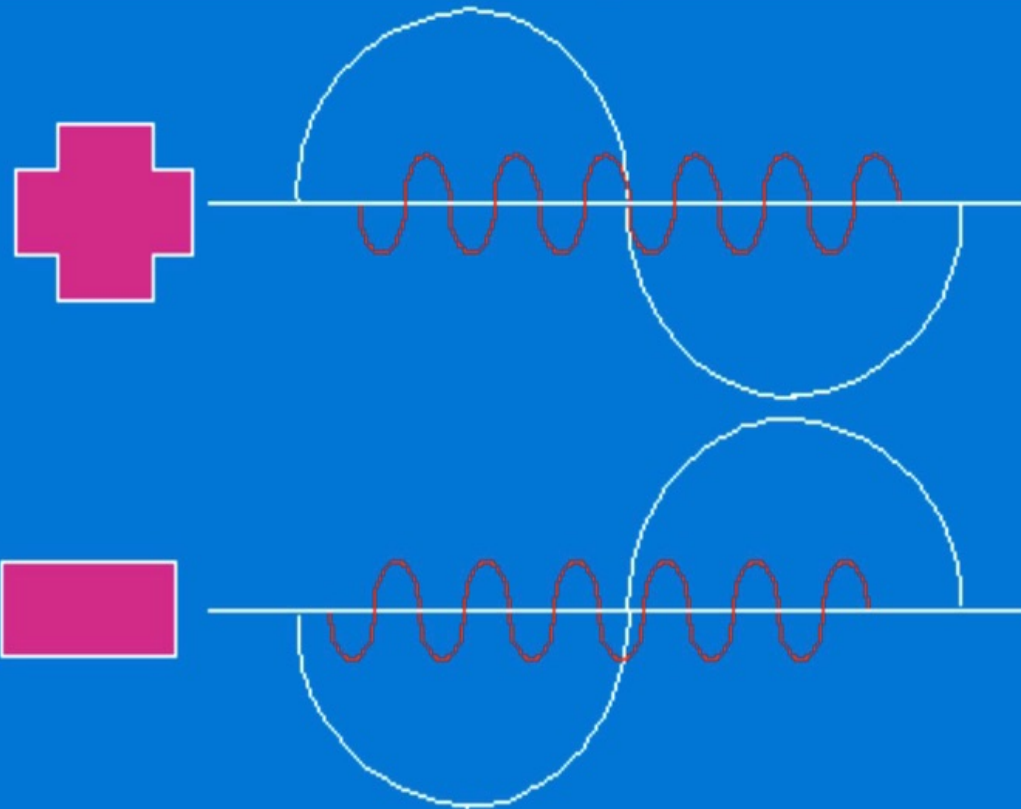
True Balanced Signal--WHY?

- Noise Rejection
 - 5 volts RMS
 - +2 - +3 dB S/N Ratio
- Ratio





Balanced Noise Rejection



separate + and - per channel---illustrating active noise cancellation



Balanced X.0 (Blue & Chrome)



- Balanced In and Outputs
- 5 v RMS
- 3/2 way with front & rear inputs & outputs
- 24 dB/oct variable subsonic





Business and Selling Tips

- **Concept**
- **SELLING**
- **Start High**
- **Value**
- **Sell the Package**
- **Everything is Custom**
- **Contests?**
- **Advertising**



Concepts

- **People don't *need* it.**
- **Why sell high end?**
- ***positive buying experience***



The Selling Process

- **Introductions**
- **Qualifying**
- **Demos**
- **Presentation/Selling**
- **Handling Objections**
- **Closing**
- **Thanks**
- **Follow-up**

DEALS!!!



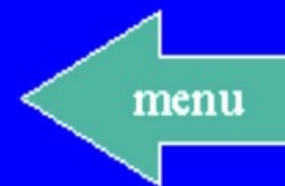
Contests

- **IASCA**
- **USAC**
- **dB Drag Racing**
- **Sunday afternoon non-sanctioned**



Advertising

- **Newspaper**
- **Radio**
- **TV**
- **Alternative Weekly Paper**
- **Car Clubs**
- **High School Yearbooks**



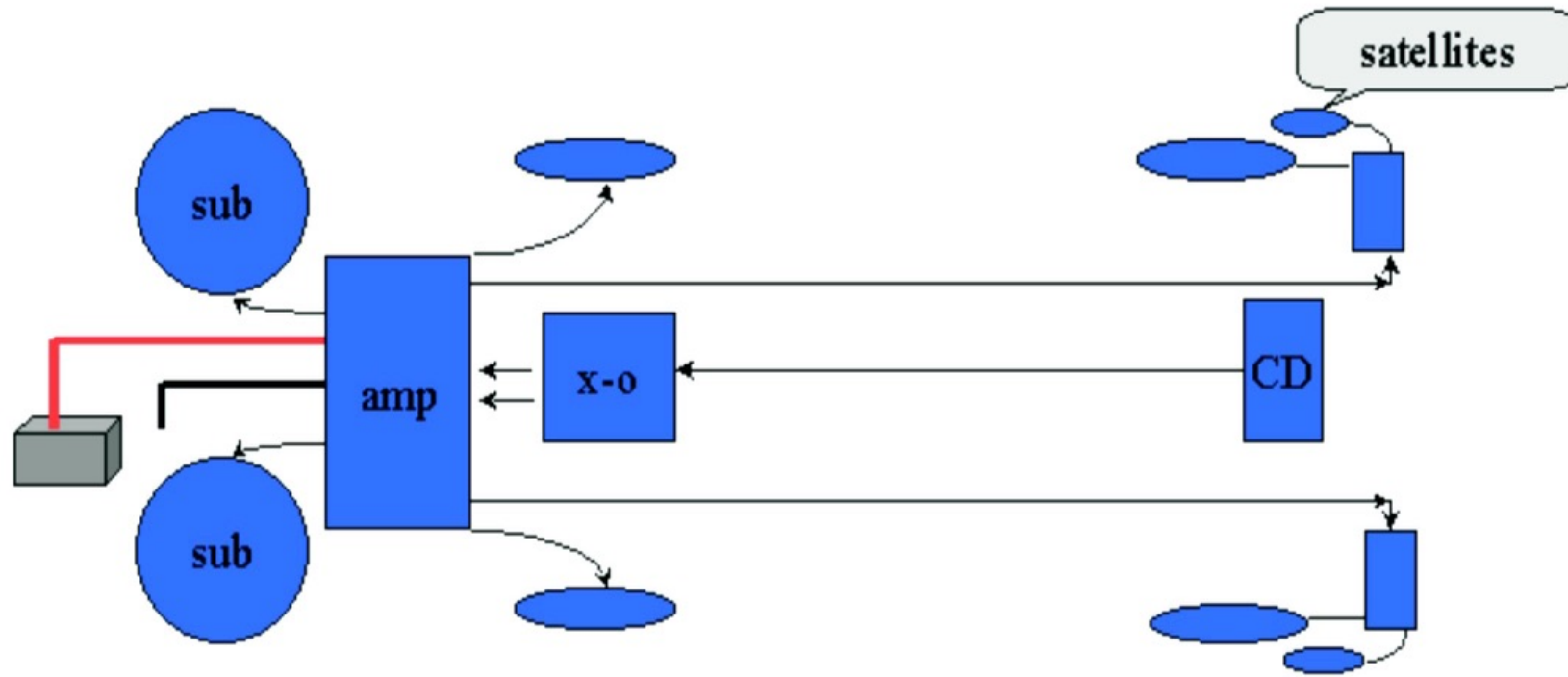


Install Tips & Assorted Tech Info

- **Troubleshooting**
- **Impedance Curves & Reactive Loads**
- **Current Draw**
- **Level Setting**
- **Balanced Level Setting**
- **Hawkins Bass Control**
- **Box Selection**

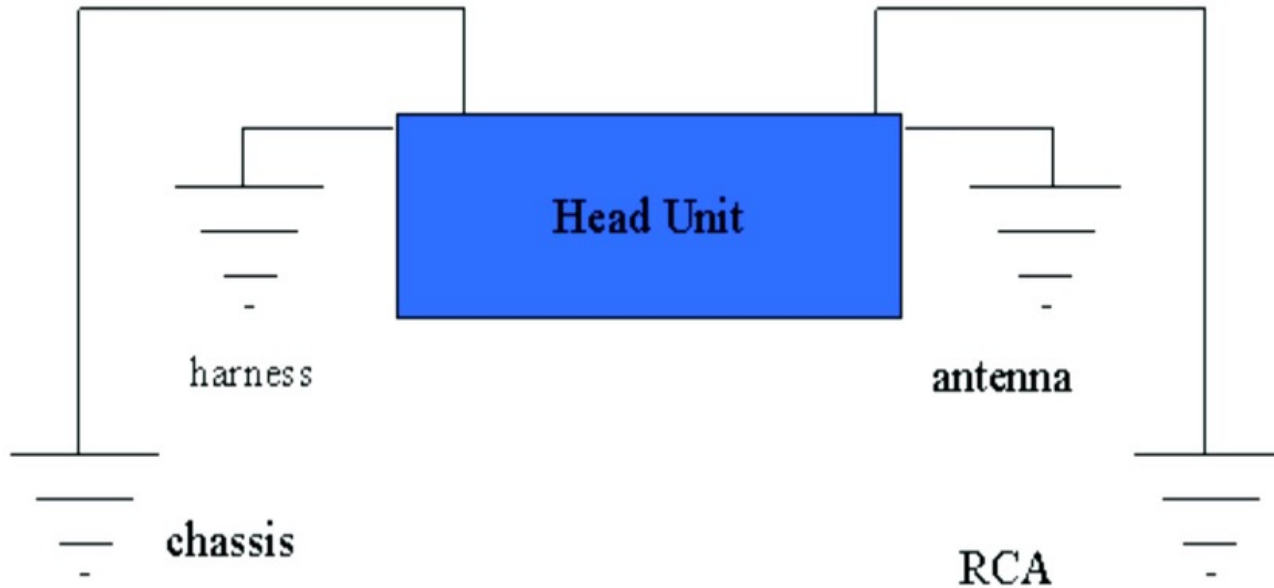


Troubleshooting--Divide and Conquer





Head Unit Grounds

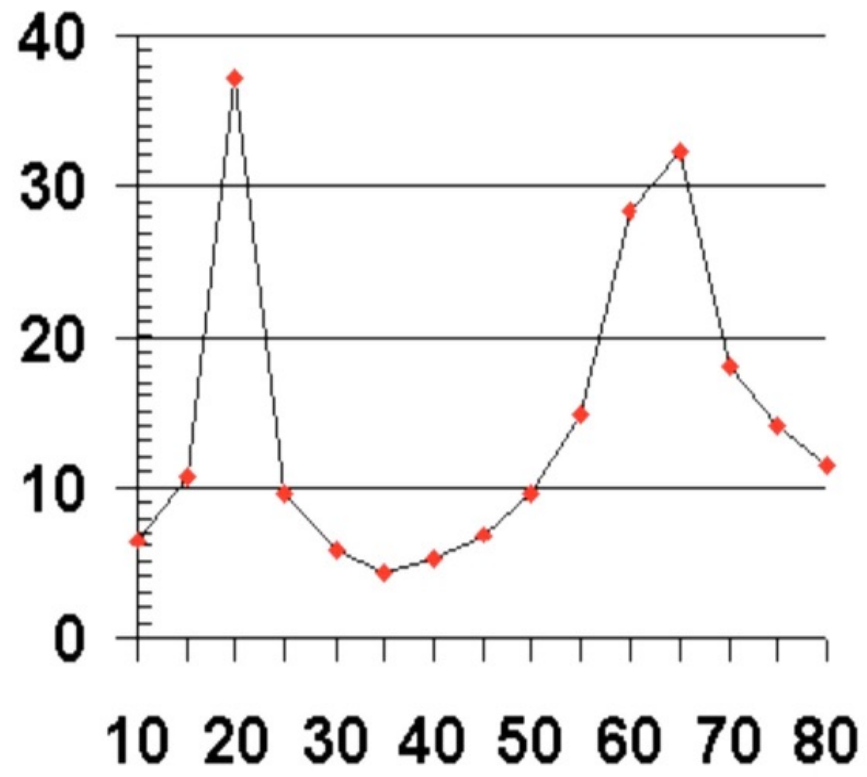


Most head units have four potential grounds--it is critical that the power ground for the head unit come from the chassis or harness to prevent damage to the system and prevent noise.



Impedance Curves

- Is there such thing as a 4 Ohm woofer?
- **NO!**





Current Draw

Ohm's Law

$$P = I \times E$$

120 watts = 10 amps x 12 volts

120 watts = 1 amp x 120 volts



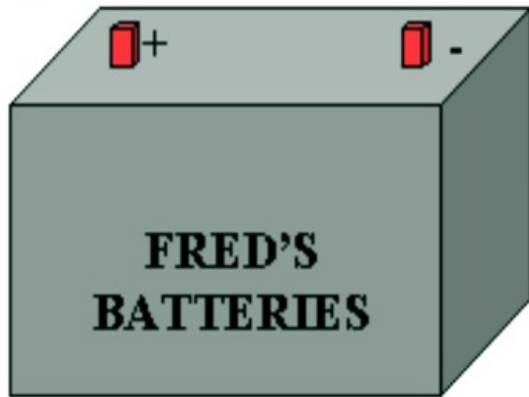
Current Draw



RELATIVE VOLTAGE: high

RELATIVE RESISTANCE: high

RELATIVE CURRENT: low



RELATIVE VOLTAGE: low

RELATIVE RESISTANCE: low

RELATIVE CURRENT: high



⋮



Level Setting

- **Problem: Gains not set correctly.**
- **Result: System with too much floor noise or not reaching maximum output.**
- **Concept: All units in audio chain reach clipping simultaneously.**



⋮



Balanced Level Setting

- **Similar to before but....**
- **Start with gains on balanced pieces low and slowly raise until clipping indicator flickers.**



⋮



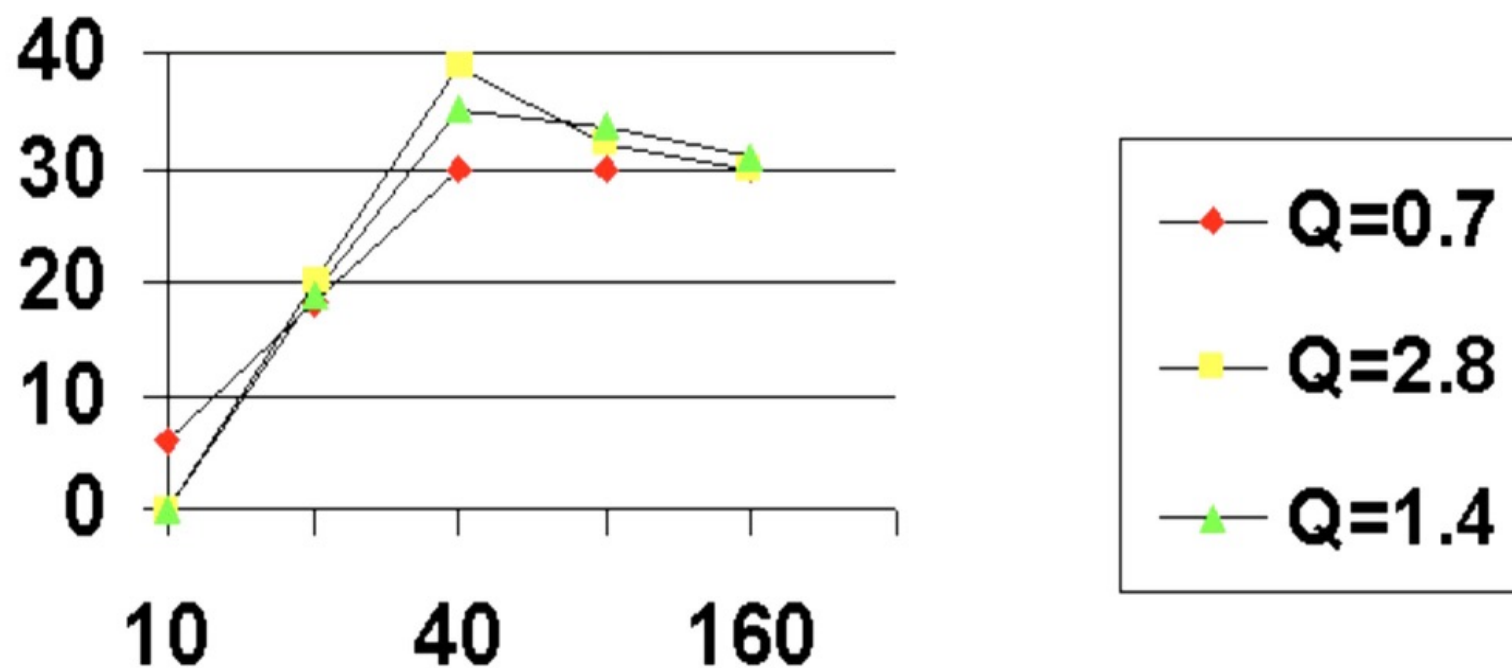
Hawkins Bass Control

- **Bass Boost + Subsonic Filter**
- **Quasi-parametric bass equalization**
- **12 dB/octave variable subsonic filter**





HBC Boost Circuit





Box Selection



sealed--small



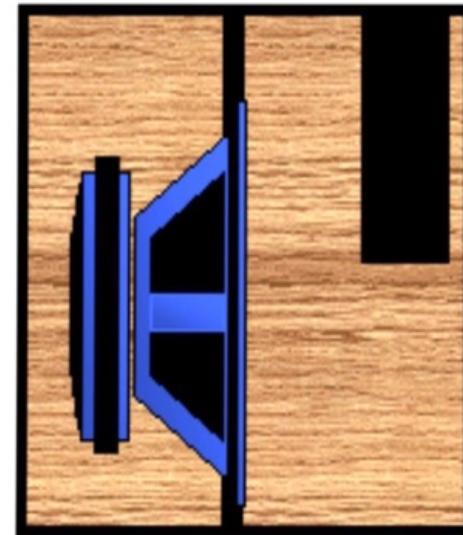
sealed large



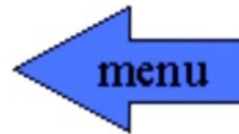
infinite baffle



ported/vented

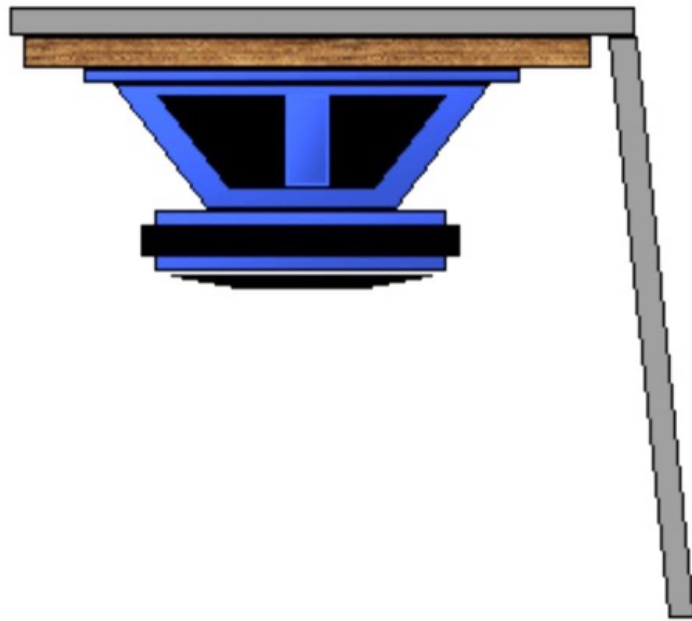


bandpass

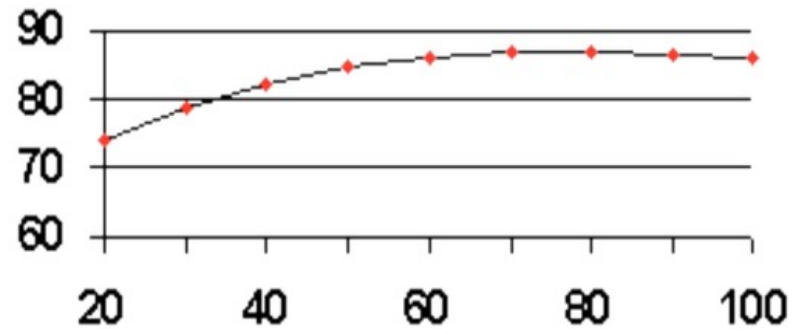




Infinite Baffle



- excellent low frequency extension
- moderate power handling
- good choice for jazz & classical at moderate levels

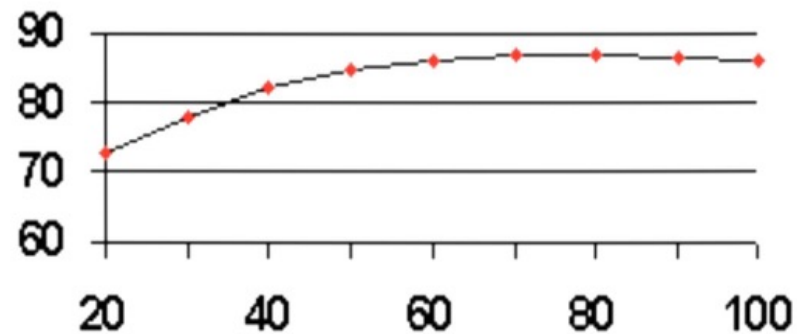




Sealed--large



- excellent low frequency extension
- good power handling
- good choice for jazz & classical

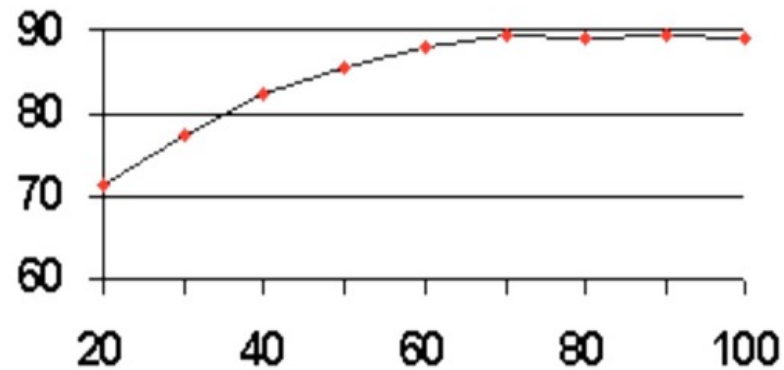




Sealed--small

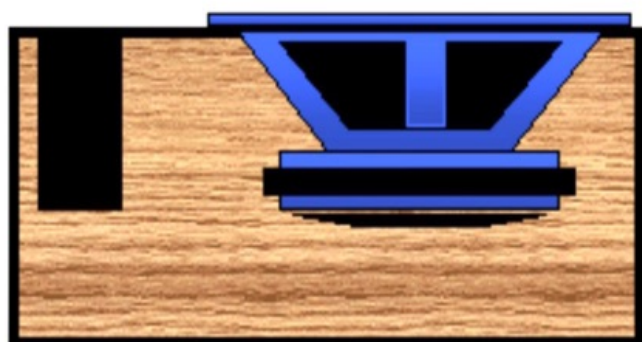


- higher F_s
- very good power handling
- good choice for SPL record setters

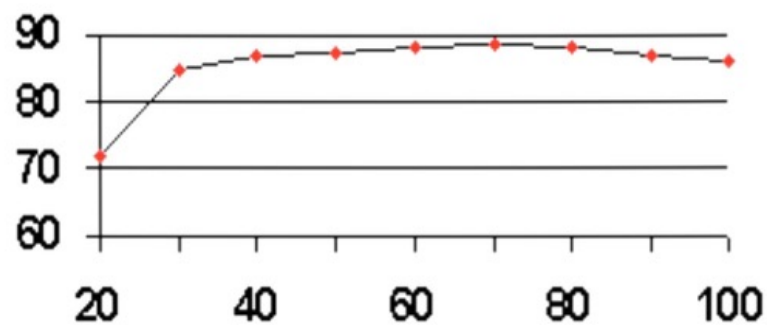




Vented/Ported

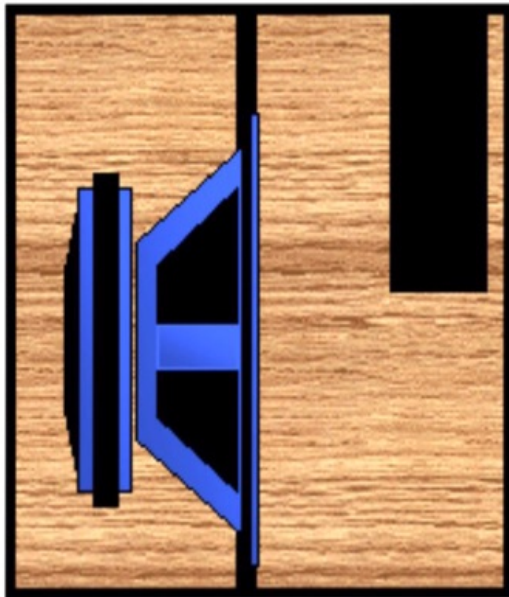


- easily tuned
- best choice for the guys who “listen to everything”
- great power handling above tuned frequency

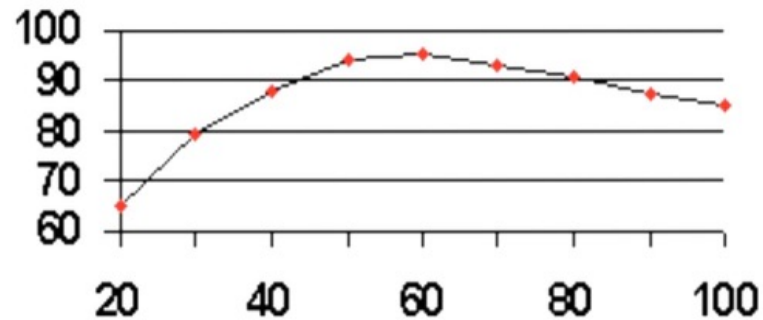




Bandpass--single & dual reflex

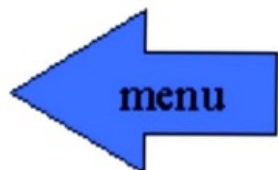
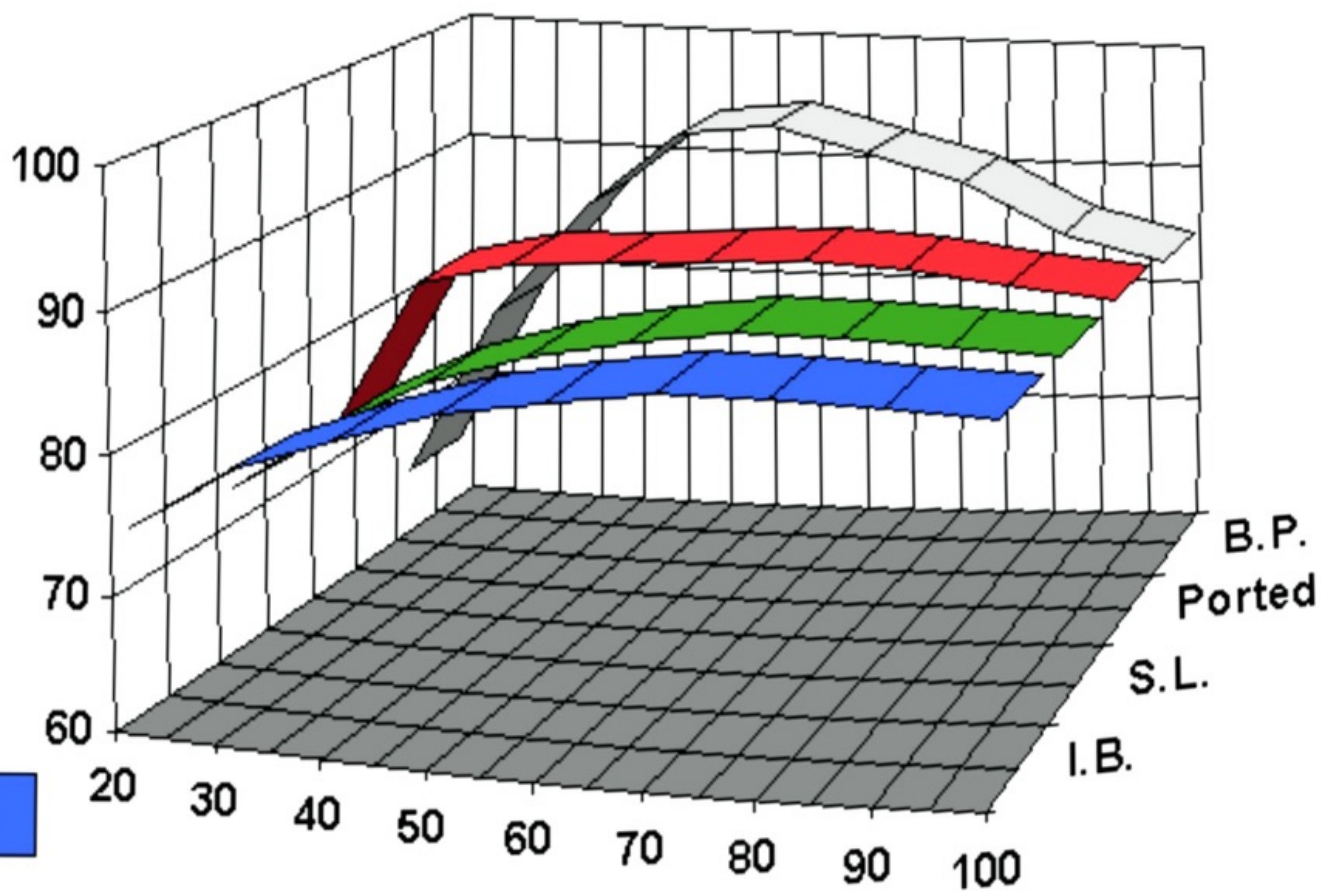


- trickier to tune
- little control over woofer
- extremely efficient





Relative Response





Where to get more information

- **Internet** www.soundstream.com
- **Magazines**
 - Car Audio
 - Home Audio
 - Pro Audio
- **Library**
- **Electronics Course**