

XLS800 SUBWOOFER 8"

A majority of people may want to upgrade to a high performance, deep bass sub-woofer for an impressive home theater setup but may not want to live with an over-sized, bulky, black box.

To this end, we have developed a 1.5ft³ audiophile sub-woofer.

This remarkable achievement of a relatively compact sub-woofer is a clever compromise between practical cabinet size and an impressive low frequency sub-bass response.

A new Peerless 8" speaker has been developed by our audio consultant, Russell Storey, in conjunction with Peerless Denmark to produce a high performance driver to suit this specific goal.

The amplifier has also been improved at the design stage to produce an amp with quality to match the box and driver.

The XLS800 comprises of a single XLS 8" speaker in a dual ported cabinet of less than 50L with a built in 200W amplifier. This combination of a *Top-Of-The-Line* Danish made driver with a heavy duty built box and 200Wrms amplifier gives performance that equals or betters most 10" subs, without the bulkiness of similarly sounding units, or boomyness of similarly priced units.

The smooth, authoritative bass response extends below 30Hz giving clean, accurate sound that will satisfy a majority of bass hungry enthusiasts. For the rest of us, the XLS800 will supplement any premium speaker system in a small to medium sized room for an improved, warming sound with music and will also reproduce DVD sound effects with dramatic aplomb.

New Dedicated 8" XLS Driver

Cast alloy with poly-paper cone

High power 200Wrms Amp

Low frequency below 30Hz

Low harmonic distortion

Low resonant designed box

Big Sound from only 1.5ft³

300 x 350 x 450mm 50L

17mm Laminated MDF

36mm MDF Speaker baffle

25mm Internal bracing

Heavy duty speaker grill

Genuine wood feature panel

Flanged Large Dual Ports

Deep clean articulate bass

No single note *boom-boom*

Matches our HDS series

or any high-end speakers

danish sound technology

Australian
Made Boxes
With Danish
Speakers



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enquiries@wescomponents.com



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Phone (02)9797-9866 Fax1 (02)9716-6015 Fax2 (02)9799-7051

XLS800 8" SUBWOOFER

New Dedicated 8" XLS Driver Cast alloy with poly-paper cone
 High power 200Wrms Amp with Low frequency below 30Hz
 Low harmonic distortion in a Low resonant designed box
 Big Sound from only 1.5ft³ 300 x 350 x 450mm 50L
 17mm Laminated MDF, 36mm MDF Speaker baffle
 25mm Internal bracing and a Heavy duty speaker grill
 Genuine wood feature panel. Flanged Large Dual Ports
 Deep clean articulate bass without single note *boom-boom*
 Matches our HDS series speakers or any high-end units
 Suitable for satellite speakers and/or home theater systems



Peerless XLS / HDS Speaker System Series

BIG Sound From A 1.5ft³ Compact Box! 200Wrms!

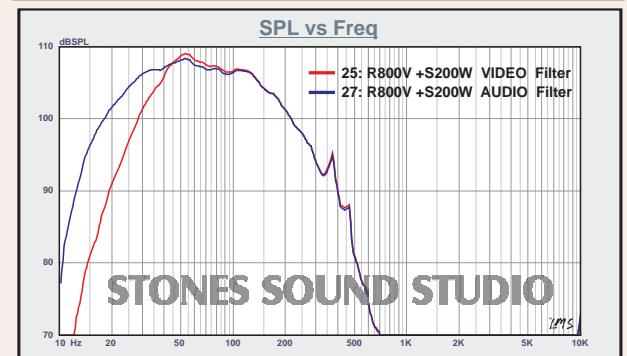
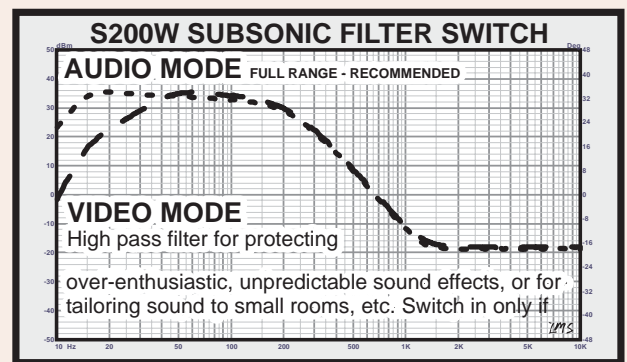
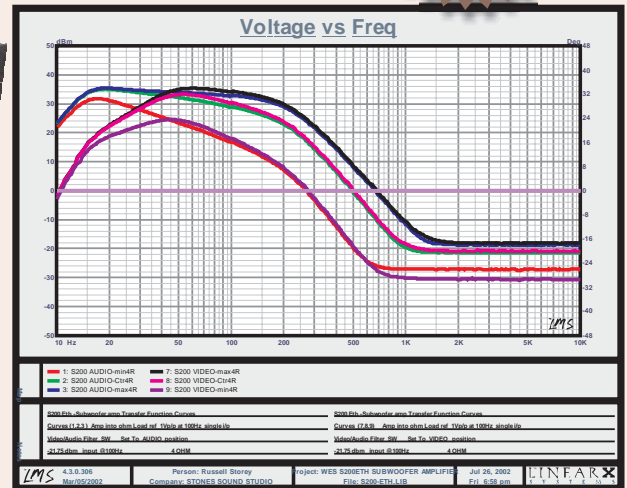
danish sound technology



PEERLESS HDS/XLS SERIES OF SPEAKER SYSTEMS

Designed By Russell Storey of Stones Sound Studio.

Welcome to our new range of high performance speaker systems available ready-made or in kit form. Every aspect of the cabinet design has been tailored to maximize the performance of the XLS range of premium drivers. This impressive new 8" driver was specifically developed for this application and uses a cast iron basket with over-sized magnet and a highly efficient and robust motor system. *Extra Long Stroke* roll surround and an open spider for low compression and low distortion at high sound levels, not previously achieved in such small box volumes. Extra thick 17mm cabinet walls and a 36mm front baffle with unique box construction techniques, panel bracing, interlocking carpentry joints for an impressively strong, solid box. A new 200Wrms, protected sub-woofer amp has been developed in conjunction with our audio consultant, Russell Storey, to achieve remarkable performance from such a reasonably priced unit. This all-enclosed all-improved amp module has a frequency response below 10Hz with very low harmonic distortion at these frequencies and built-in overdrive protection with EQ switching and low-pass adjustments. A collective weight of 20Kg indicates the craftsmanship and quality of all components, this is an audiophile quality sub-woofer. Thank you and enjoy!



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WES COMPONENTS Aust Asia
 enquiries@wescomponents.com Phone (02)9797-9866 Fax1 (02)9716-6015 Fax2 (02)9799-7051
 NOV 2002

XLS

eXtra Long Stroke
Peerless Sub Woofers

Peerless XLS800 8" SUB-WOOFER Dual Port 200W KIT800 - Instruction Sheet

Contents of KIT800 (Complete Kit):

XLS800-xx

Cabinet (xx=Colour Code)

With Black Speaker Grill
With Wood Feature Panel

Woofer 8"

830491 Peerless XLS Sub

S200W

200Wrms Sub-Amp

Screws x20

STS7B (7mmx20mm)

Gasket Tape

Approx' 1 metre

FEATURE PANEL

The XLS800 has a separate piece of solid polished wood supplied with the kit. Please affix this carefully with the appropriate WOOD GLUE (Not Supplied) and let dry as per glue instructions.

Before You Start:

Check that all contents of the kit are supplied and in good condition. Make sure you have a clean work area. It is recommended you use a drop sheet so that your work does not scratch the cabinet.



Place your speaker cabinet on a non-slip, non-scratch surface.

Insert the Amplifier. The ports are on the bottom side, so make sure you install the amp upright. Pilot holes are pre-drilled so simply screw in the supplied screws, caution that you don't thread the screws by over tightening. If using an electronic screwdriver, adjust to a medium/high torque setting.

Insert the Speaker. Cabling is supplied with the amp and will connect directly to the 8" driver. We recommend that you solder this connection for reliability, but this is not essential. Make sure the cable is not obstructing the ports or going to rattle on the drivers cone. Now simply locate the driver into the flush hole and apply the screws, again tightening carefully as not to strip them or slip and puncture the cone.

S200W SUB WOOFER IN-BUILT AMPLIFIER

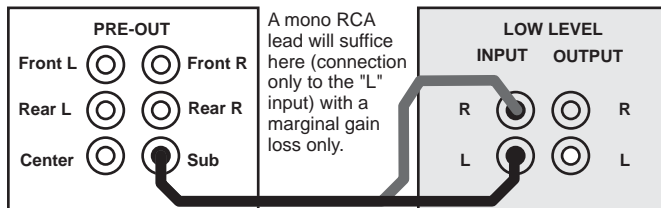
S200W CONNECTION INSTRUCTIONS

- Internally, the RED and BLACK wires connect directly to the speaker driver terminals. Black is negative (-), Red positive (+). Make sure the cable is sufficiently anchored and if extending, make sure your connection is correctly insulated. Do not apply power until you have double-checked all wiring and connections. The following is external connection options:
- For connecting the S200W to multi-channel surround sound amplifiers you will require an RCA adaptor lead, of appropriate length, that has 1x RCA plug to 2x RCA plugs. (See WES catalogue, section 8.) Connect this between the "Low Level INPUT" RCA terminals, both L & R, on the S200W. Connect the other end (1x RCA plug) to the "SUB WOOFER OUTPUT" terminal on your amplifiers rear panel.
- For connecting the S200W to a standard stereo amplifier you will require a stereo RCA lead, of appropriate length, that has 2x RCA plug to 2x RCA plugs. (See WES catalogue, section 8.) Connect this between the "Low Level INPUT" RCA terminals, both L & R, on the S200W. Connect the other end to the "PREAMP OUTPUT" terminals on your amplifiers/preamplifiers rear panel. This output **MUST** be *after* your amplifiers volume control so that your volume control will affect the subwoofers volume level too.
- "LOW LEVEL OUTPUT" is for connecting additional S200W sub woofer amplifiers.
- For connecting the S200W to an amplifier without PREAMP outputs you will either cut and split the existing speaker connection leads or acquire additional speaker connection cable, of appropriate length, to connect the S200W *Inline* with your normal speaker connection. (See WES catalogue, section 13.) Connect the speaker cable to your amplifiers speaker output terminals, connect this to the S200W "HILEVEL IN" terminals. Then connect the S200W "HILEVEL OUT" to your existing stereo speakers. Double-check your left & right, and the positive & negative polarity in all your speaker cable connections.

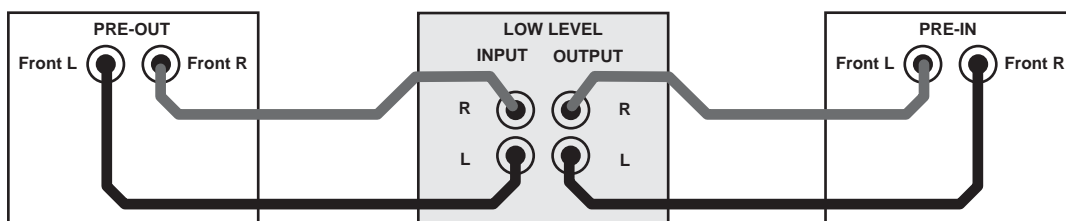
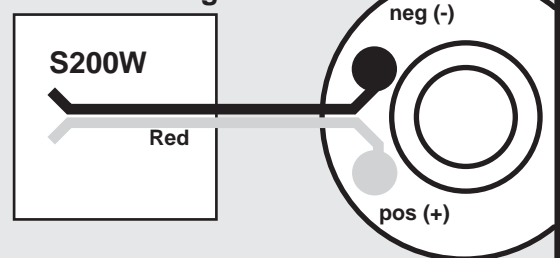
S200W ADJUSTMENT INSTRUCTIONS

Your existing stereo speakers have a low frequency cutoff (the lowest frequency possible to be produced by such a speaker), any sound below this frequency would not normally be heard, thus you acquired a sub woofer to reproduce these lower frequencies. The control labelled "PWR/PRT FREQ." will set this frequency where you want the sub woofer to take over. Check your Stereo speakers instruction manual for this value, or simply adjust by ear. A boomy bass sound means the frequency is too high (both the sub and your stereo speakers are generating bass) A mellow but slightly empty sound means the frequency is too low (a gap exist between the sub and the stereo speakers). Adjust the "GAIN" also. Unsatisfactory sound will also result if the S200W "PHASE" switch is set incorrectly. Try both selections. For connection to an amplifier with "Sub Out", set the frequency to maximum (180Hz) and make your adjustments via your amp (see its instruction manual). Generally, many hours of listening can occur before correct levels are accomplished. You should also experiment with the location of your sub woofer as this can dramatically improve performance.

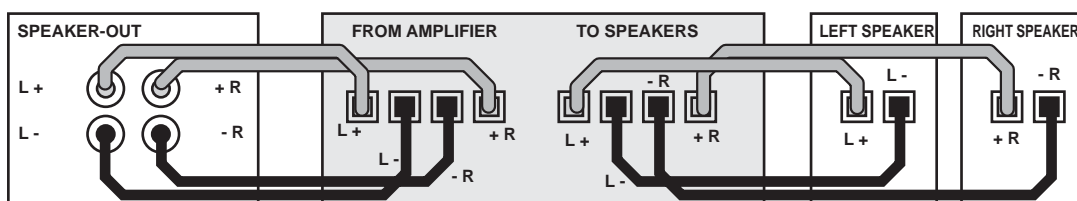
EXISTING SYSTEM



Internal wiring



EXISTING
POWER
AMP

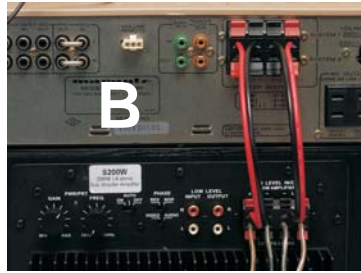


EXISTING SYSTEM

S200W

EXISTING SPEAKERS

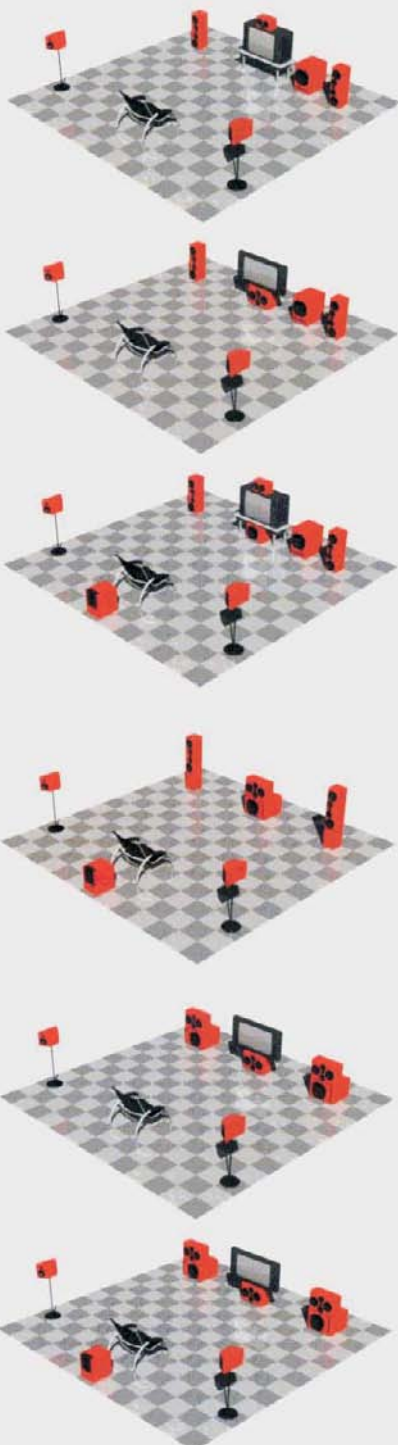
AMP CONNECTION



For Home Theatre Amps, simply connect the "Sub Woofer Out" RCA to either the Left or Right (or both) "Low-Input" Sockets on the XLS800 (S200W Amplifier). Power up and adjust.

If your stereo amplifier has a "Pre-Amp Out" connection, ideal! A stereo RCA interconnect lead of any required length connects between here and the S200W "Low Input" Sockets. See Diagram "A".

3rd option is via the speaker jacks, this is not recommended because it is not an ideal sound source, however, run the speaker cables from your amp to the S200W, now connect your speakers to the S200W terminals. See Diagram "B".



General Subwoofer Location Information

The biggest impediment to good quality bass from a subwoofer usually has little to do with the subwoofer itself but the problem is that a sub produces long wave lengths (bass) form standing waves in rooms with parallel walls, resulting in a very uneven distribution of sound level throughout the listening room. Careful location of the subwoofer can help. First, keep your subwoofer away from a corner by at least two feet. Corner placement seems attractive because it increases the bass output but this location also excites more (usually unwanted) room resonance. Next, by placing the subwoofer so that the distance from the woofer to the nearest two walls is significantly different, you can stagger these standing waves so that they don't line up on top of each other. The proper phasing of the subwoofer depends on its location relative to the other speakers. The easiest way to get this right is to try it in and out of phase; whichever way has the most bass is the right way. If it's too much bass, try adjusting the frequency cut-off or just turn the subs volume down.



One Subwoofer or Two?

Far more effective than finding even the most ideal subwoofer location of a single subwoofer is to use two subwoofers. They can effectively compliment each other by having one woofer's peaks filling in the other woofer's troughs. In addition to following the same considerations mentioned above, you'll want to place the two woofers so that they are different distances from the walls relative to each other.

FEATURE PANEL

The XLS800 has a separate piece of solid polished wood supplied with the kit. Please affix this carefully with the appropriate WOOD GLUE (Not Supplied) and let dry as per glue instructions.



XLS800 Location

The twin ports of this subwoofer fire out the back. Please don't obstruct these ports as distortion and wind turbulence noises will result. It is recommended that at least 6 inch or 15cm from the wall.

XLS800 - Speaker Placement Suggestions

Before we begin, let us give you a few warnings.

The methods here will help get you the most accurate bass. If your goal is strictly maximum "slamitude," just stick your sub in the corner, turn up all the knobs and have fun. Finding the perfect settings and location takes time. If you have low tolerance for moving speakers and twiddling with your audio gear, realize that you're missing a few simple techniques by which you may be able to greatly improve the sound of your system. Let your ear be the final judge. We'll give you some techniques and advice, but the science of room acoustics is so complex it defies easy answers.

The Goal

It's relatively easy to put a XLS800 into your system and hear more bass. What's difficult is making the XLS800's bass integrate with the sound of your main speakers. A poorly integrated XLS800 will sound thick, heavy boomy, and unnatural, calling attention to the fact that you have smaller speakers reproducing the frequency spectrum from the midrange up, and the big XLS800 putting out low bass. A well-integrated XLS800 produces a seamless sound with natural reproduction of music and no boomy thump.

Positioning

Room acoustics have an enormous impact on the sound of speakers, including the XLS800s. A phenomenon called "standing waves" makes bass response uneven from place to place in your room. To experience this for yourself, put on a CD with a strong, consistent bass line. Notice how the volume of the bass goes up and down as you move around the room. Stand in one place and then squat down-you will probably notice that the bass changes in the vertical plane as well! Because the XLS800's location affects how standing waves are created, the first step to getting accurate bass response is finding the right spots for your XLS800 relating to your listening position. We'll share a few guidelines that may be helpful, but in the long run nothing beats trial, error and your own ears.

Stick It In The Corner-

This is the advice most often given and it certainly will yield loud bass. But corner mounting may make the woofer sound "one note-ey," and boomy on music. If lack of bass volume is your biggest XLS800 problem, this may be the answer for you.

Avoid Sitting Up Against the Wall-

Bass waves build up and "hang out" at room boundaries (walls). Your system will sound thick and heavy when your listening chair is up against a wall. If you must sit against the wall because of furniture layout, place your XLS800 away from walls and corners.

Avoid Symmetrical Placement-

Avoid putting the XLS800 the same distance from two walls. For example, if you have a 20' wide room, don't put the XLS800 10' from each wall. Similarly, don't put the XLS800 near a corner and equidistant from the side and rear walls. Instead, stagger the distances to each wall.

Put The XLS800 As Close To The Main Speakers As Possible-

Even though bass sounds are non-localizable, cabinet resonance and other factors conspire to make this less true in practice than in theory. It'll be much easier to get seamless blending between sub and main speakers if they are on the same side of the room. If possible, put the XLS800 behind the plane of the main speakers. At very least, keep the XLS800 in the front half of the room.

Here's An Old Trick-

Put your woofer in the same spot as your listening position. It's best to raise the XLS800 off the ground to seated ear height (use a sturdy, non-resonant platform). Play a piece of music with an ascending and descending bass line. Crawl around the floor on your hands and knees...until you find the spot where the bass sounds smoothest, and where each bass note has about the same volume and clarity. Avoid positions where some notes 'hang' longer and/or sound slower or thicker than others. When you've determined where the bass sounds best, put the XLS800 there.

Use Two XLS800s-

Using two asymmetrically placed subs will minimize the effects of standing waves in your room, yielding smoother bass response as well as better dynamic range. But don't run out and buy another sub just yet. Get the sub you have now to sound its best before spending more money. You may be perfectly happy with just one sub once you've tried our suggestions.

One Note Of Caution-

The XLS800 is NOT magnetically shielded and may damage your TV if placed too close to the set. Select an unused video input on your TV to bring up a single colour screen. If you see any colour distortion anywhere on the screen, an unshielded speaker is too close to the set and should be moved away from the TV until the colour distortion disappears.

XLS800 Adjustments

Position and adjustments are interactive so every time you move your XLS800, you need to readjust the sub volume, low pass filter and phase (polarity). When properly adjusted, you won't "hear" the XLS800 at all. It will sound like your main speakers are making all the sound- except with a whole lot more bass than they could muster all on their own.

Setting Level-

Get a suitable test CD or DVD with sine wave signals or warble tones covering the range of 20Hz to 200Hz or so. Using a sound level metre, match the output at the listening position at 50Hz and 150Hz [using 'C' weighting and 'slow' metre response] by adjusting the volume control of the XLS800. Make sure the volume control on your preamp [or receiver] remains at the exact same volume. If you don't have a metre or test discs, use a CD with vocals and a consistent acoustic bass line and set level to the point where the upper and lower ranges of the bass sound well balanced.

Setting Low Pass Filter (Crossover)-

If your main speakers are full size with good bass response, set the low pass filter to 60Hz - 80Hz to start. If your main speakers are bookshelf designs, set the low pass filter in the 80Hz - 100Hz range. If you have compact satellites, set the low pass filter to 150Hz to start. Put on a test CD or DVD with test tones. With a fixed input level, carefully measure the output level at the listening position for each...interval between 30 and 200Hz and write it down or make a line plot on a sheet of graph paper. Listen while you measure. You hear differently than the sound level metre does...trust your ears, not the metre. Raise or lower the low-pass filter setting on the XLS800 to achieve the smoothest response. Turn the low pass filter down if there's an excess of output around the crossover point, turn it up if there's a response dip. Do not be alarmed if you have response variations of several dB from test tone to test tone. You are seeing normal variations in response caused by the speaker's interaction with the room. Absolute flat response is a worthy but somewhat unrealistic expectation in most systems and rooms. If you don't have a metre and test disc, use your ear to make this setting. Put on a CD with male voice and a consistent bass line. Adjust the low-pass filter until the male voice sounds "full" and natural but not thick and heavy.

Setting Phase (Polarity)-

Using a test signal at the nominal crossover frequency [you set in the step above], set the phase of the XLS800 to deliver the highest output at the listening position. It helps to have a friend on hand to change the polarity setting on the sub while you measure and listen.

Do It All Again-

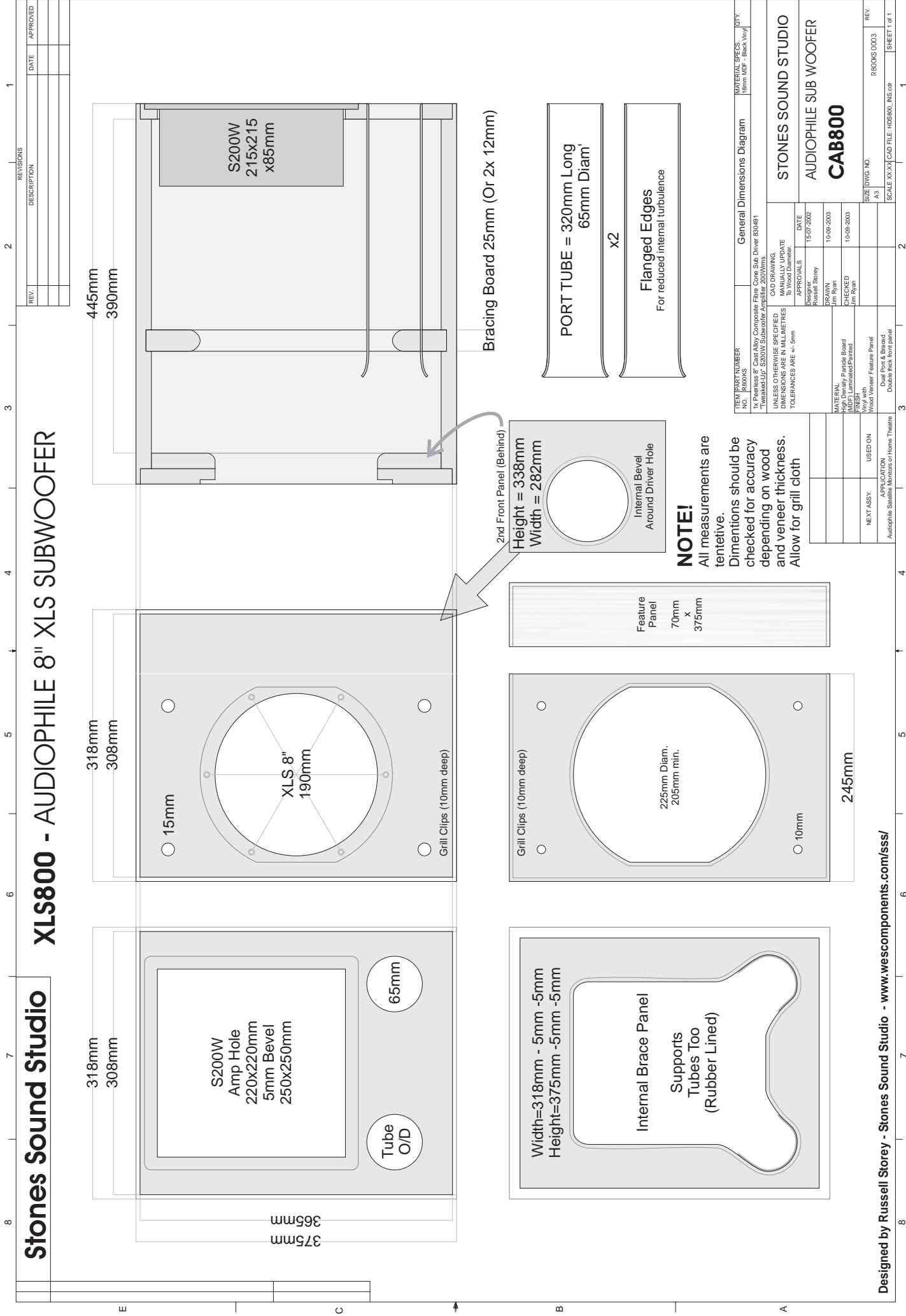
All these adjustments are interactive. Once you set polarity, go back and re-adjust level and low-pass filter settings to get the smoothest response. The final proof of optimal performance is in the listening. Put on a CD with an acoustic bass. The bass instruments should appear to be coming from the main speakers, not the sub. The sub should be audibly "invisible."

What About Movies?-

If you listen to movies with your new set-up, you may find that the bass is a little "light" and doesn't deliver the impact you expect. No problem-just turn up the XLS800 volume until you are happy. Mark the volume settings that are best for music and movies and readjust as you switch sources. If that's too inconvenient, choose a mid-point level that gives you the best balance.

Stones Sound Studio

XLS800 - AUDIOPHILE 8" XLS SUBWOOFER



NOTE!
 All measurements are tentative.
 Dimensions should be checked for accuracy depending on wood and veneer thickness.
 Allow for grill cloth

| REV. | DESCRIPTION | DATE | APPROVED |
|------|-------------|------|----------|
| | | | |
| | | | |

| | | | |
|---|------------------------------------|---|---------------------|
| ITEM / PART NUMBER NO. R800KS | General Dimensions Diagram | MATERIAL SPECS: 18mm MDF - Black Vinyl | QTY. |
| 1x Peerless 8" Cast Alloy Composite Fibre Cone Sub Driver 830.491 | | | |
| *Twisted Lip S200W Subwoofer Amplifier 200Vrms | | | |
| CAD DRAWING MANUALLY UPDATE | | | |
| DESIGNER Russell Storey | DATE 15/07/2002 | | |
| DRAWN Jim Ryan | DATE 10/09/2003 | | |
| CHECKED Jim Ryan | DATE 10/09/2003 | | |
| MATERIAL High Density Particle Board Unfinished/Unpainted | FINISH Viny With Wood Veneer | SIZE DWG. NO. A3 | REV. R800KS 0003 |
| NEXT ASSY. Audiophile Satsum | USED ON Audiophile Satsum | SCALE 1:1 | |
| APPLICATION Audiophile Satsum | | CAD FILE HDS800_INS.cdr | SHEET 1 of 1 |

STONES SOUND STUDIO
AUDIOPHILE SUB WOOFER
CAB800