VS3208

USER MANUAL

QUESTED MONITORING SYSTEMS

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1. Introduction

Thank you for purchasing your Quested monitor system and whether it is a pair of passive monitors or a 4 way active system you can be assured the same care has gone into its design and manufacture. You can be certain you have purchased one of the finest monitors in the world and if you take time and care in positioning and aligning the system you will appreciate why Quested monitors have a reputation for faithful reproduction covering the entire audible spectrum. They are professional monitors, and therefore are not designed to flatter but faithfully reproduce. Please take care to maintain the system and you will obtain many years of service.

Please take the trouble to complete the registration form that came with your monitors. This will help us in the future, should you raise any queries. If you have any questions please address them to your Quested representative, who will then refer back to the designer and manufacturer if necessary. In this way, you will be assured in obtaining the best possible performance and long term reliability of your system.

This manual covers the VS3208 self powered active monitor.

Please read this manual, which we have kept as concise as possible, it really will help you and covers important safety considerations.

The VS3208 is a self powered three way active monitor. with integral electronics that provides in excess of 400W rms. When the VS3208 is used as a stereo pair they are suitable for main monitors in smaller control rooms or as mid field reference monitors in larger control rooms. However in LCR or full surround systems the VS3208 are suitable as main monitors in medium to large rooms, either in an all VS3208 arrangement or in conjunction with VS2205's or VS2108's and the VS1115 sub woofer. The optional remote mounting kit allows the electronics to be removed and mounted away from the speakers enabling the VS3208 to be mounted in soffits where cooling cannot be provided.

Typical applications include broadcast, post production, project studios, mobile recording and audio visual as well as for general installations in non-studio applications.

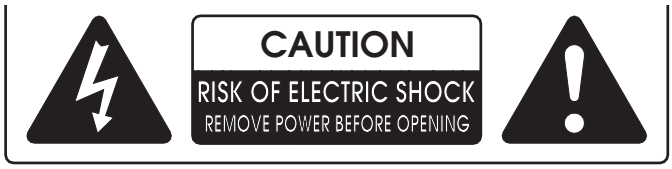
The compact size allows for ease of placement of three or more units for LCR and multi channel applications and the width of 19" (485mm) enables the VS3208 to be mounted in the space that is frequently available above rack mounted equipment.

Although the bandwidth of the VS3208 is more than adequate for most situations the low end performance can be further extended by combining it with the VS1115 sub bass. The two products make an ideal combination and extend the frequency response down to 20Hz. The VS1115 is also ideal when a discrete sub bass channel is required when using formats such as Dolby 5.1

2. Safety Considerations

2.1. General

Before proceeding to connect your Quested Monitor to the AC power supply please read the following safety information.



CAUTION: **RISK OF ELECTRICAL SHOCK. REFER SERVICING TO QUALIFIED PERSONNEL. THE POWER CORD MUST ALWAYS BE REMOVED BEFORE THE AMPLIFIER IS DISMANTLED.**

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE**

WARNING: **THIS APPLIANCE MUST BE EARTHED**

The cores in the supplied mains lead are colour coded in accordance with the following code:

GREEN AND YELLOW :	EARTH
BLUE:	NEUTRAL
BROWN:	LIVE.

As the colours of these wires may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured green and yellow must be connected to the terminal in the plug which is marked with the letter 'E' or by the earth symbol, or coloured green and yellow.

The wire which is coloured blue must be connected to the terminal in the plug which is marked with the letter 'N' or coloured black.

The wire which is coloured brown must be connected to the terminal in the plug which is marked with the letter 'L' or coloured red.

Notice: For certain countries the power cord will be supplied with an integral moulded plug to satisfy national safety standards.

CAUTION: **THE HEATSINKS OF THIS UNIT CAN REACH ELEVATED TEMPERATURES WHICH MAY FEEL HOT TO THE TOUCH.**

CAUTION: **THIS UNIT CONTAINS MAGNETIC COMPONENTS WHICH MAY EFFECT ADJACENT SUSCEPTIBLE EQUIPMENT.**

2.2. Hearing damage

This equipment can deliver sound pressure levels in excess of 112dB. At this level permanent hearing damage can occur and exposure to this level of sound, even for relatively short periods (see table below), can be harmful. Of equal importance to the maximum level of sound is the exposure to high levels of sound for extended periods. There are no international agreed limits and different countries have different limits measured in differing ways. IT IS THEREFORE IMPORTANT THAT THE USER ESTABLISHES THE RECOMMENDED, AND IN SOME TERRITORIES, LEGAL LIMITS, THAT ARE IN PLACE.

As a guide the table below shows the levels that are acceptable in the majority of Western Europe and the US & Canada.

dB(A)	Listening time per day
90	8 hours
95	2.4 hours
100	40 minutes
105	15 minutes
110	5 minutes
115 and over	Not at all

It is also important to note that the effect of exposure to sound is cumulative. Having listened to sound, for example, for 15 minutes at 105 dB then further exposure to noise levels above 80dB should be avoided until the next day.

3. Unpacking

This Quested product has been carefully manufactured, tested and packed to ensure it arrives in a flawless condition. The component parts of the packing have been thoughtfully designed to offer sufficient protection during transportation, yet remain fully recyclable and should be retained for future use. Also included in a separate bag will be the appropriate power cord for your country.

4. Installation

4.1. Electrical connections

4.1.1 Safety Earthing

This product has been designed to comply with international safety standards. It is essential that the green/yellow core of the mains cable, or the ground pin of a 3 pin moulded plug, is connected to the electrical installation safety earth or ground. It is internally connected to all exposed metal surfaces and it is essential for personal safety as well as proper operation of the product. The audio signal input is electronically balanced and does not need the disconnection of any safety earth for the avoidance of hum loops.

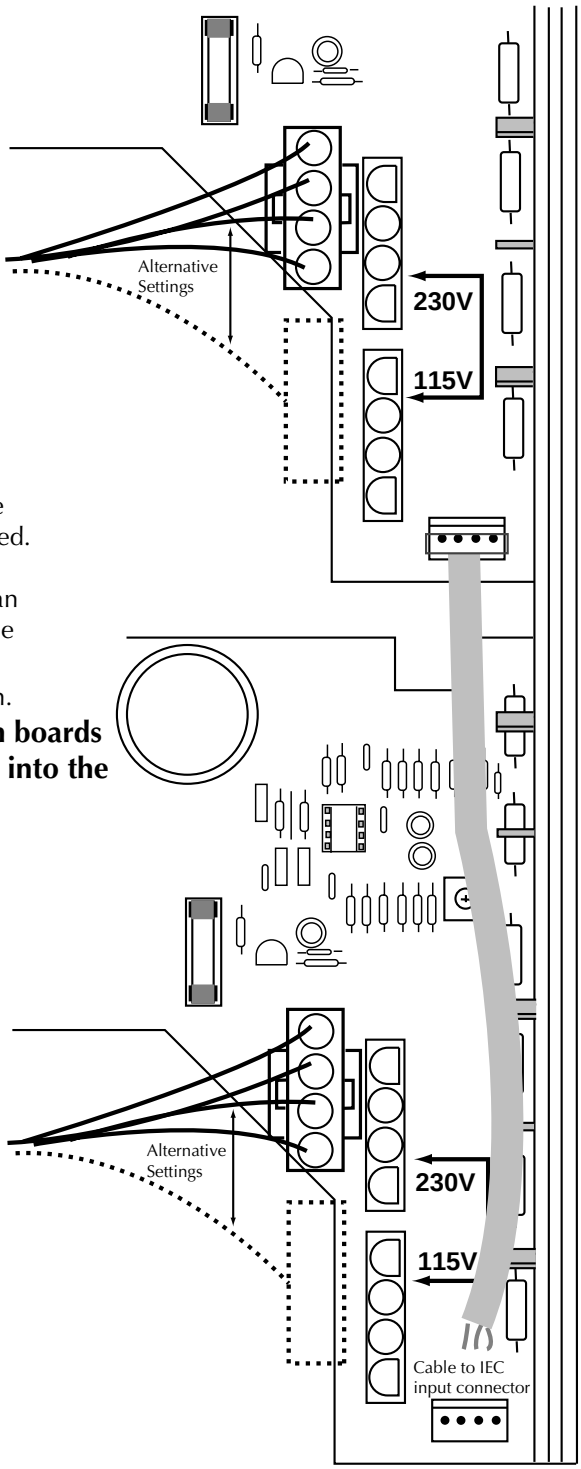
4.1.2. Fuse Setting

It is very unlikely the fuse will fail during normal use, but should this occur the situation must be approached with some caution. Check that the mains voltage setting is correct for your installation supply, and that the original fuse was the correct rating, see ***9.2 Spares.*** The fuse may blow if the unit is subjected to mains power surges or spikes, or if the mains wiring has any poor or faulty connections, in which case a qualified electrician should be consulted. Very occasionally a fuse can become degraded after many years of service and simply replacing it with a new one will restore the system. The fuse is housed in a unit integral with the IEC inlet connector(see rear panel drawing page of this manual). To gain access to the fuse remove the power cord and unclip the fuse carrier using a flat blade A spare fuse of the correct rating is also provided within the same carrier. If none of the above is the cause of the fault it is likely that the unit has suffered an internal component failure and will need returning to a qualified agent for servicing **IF THE REPLACEMENT FUSE SHOULD FAIL DISCONNECT FROM THE MAINS IMMEDIATELY AND HAVE THE UNIT PROFESSIONALLY REPAIRED BEFORE ATTEMPTING TO USE IT.**

4.1.3. Voltage Setting

The mains voltage for which the unit is configured is shown on the orange label above the IEC inlet connector. For the 230vAC setting the unit will perform to full specification over the range 230v to 263v and will perform to full spec., except for a progressive reduction in power, down to 179v. Likewise for the 115vAC setting the unit will perform to full specification over the range 115v to 131v and will perform to full spec., except for a progressive reduction in power, down to 90v. At normal listening levels the reduction in available power will not be noticed.

Simplified view of rear of VS3208 with rear panel removed, showing right hand side



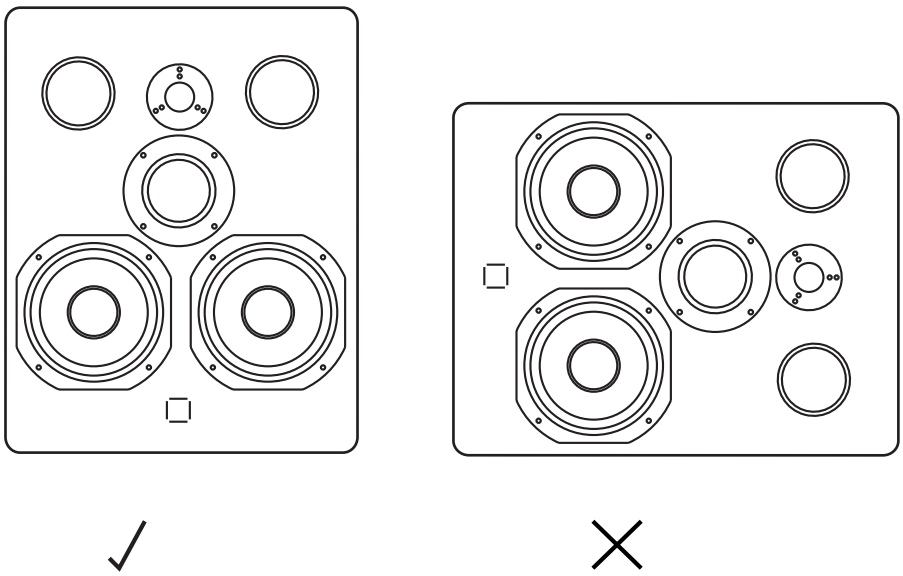
If for any reason it is necessary to change the voltage setting the mains lead must be removed and the back panel taken off using a 2.5mm hex driver to remove the seven countersunk socket screws (3 on each side and the seventh adjacent to the XLR connector). Gently pull away the rear panel to reveal the cable that is preventing the rear panel from being removed. Disconnect the cable that is running from the IEC inlet connector to the main PCB. The rear panel can then be removed. The connector plugs can then be removed from its existing position and placed on the adjacent pins as indicated in this illustration.

It is essential to switch the settings on both boards so that both connectors are either plugged into the 230 volt or 115 volt pins.

4.2. Positioning

The VS3208 is designed to be mounted vertically and should not be turned on its side. Not only would this result in a degradation of the speakers acoustic performance, but could result in the overheating of the amplifier as the heat sink is designed for effective cooling when the cabinet is mounted vertically.

The VS3208 can either be soffit mounted or positioned on speaker stands, but which ever way is



chosen, the support should be rigid and must not vibrate when the monitor is driven. Vibrations will result in lack of low frequency definition. Its positioning close to or away from the rear wall and proximity to any room corners is best determined by experimenting and placing the speaker in differing positions. The shape of the room, normal listening position and room treatment will all have an effect on determining the speakers positioning.

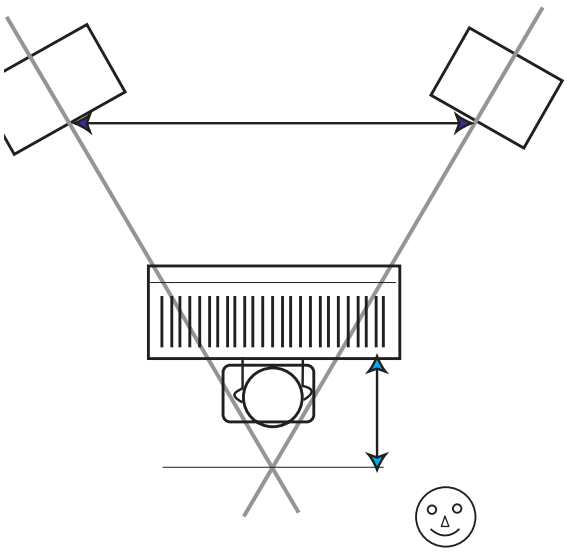
Placing the cabinet against a wall will reinforce the bass performance of the speaker and up to an additional 3dB may be obtained. Placing the monitors in a corner will further reinforce the bass performance and gains of up to 6dB may be achieved, but be very careful about sitting the monitors in a room corner because it can excite standing waves and create an unpleasant boominess. IF THE OPTION OF SOFFIT MOUNTING IS CHOSEN IT IS ESSENTIAL THAT ADEQUATE AIRFLOW IS PROVIDED BEHIND THE SOFFIT TO ENSURE THE AMPLIFIER IS ADEQUATELY COOLED OR THE OPTIONAL REMOTE MOUNTING KIT IS PURCHASED TO ENABLE THE ELECTRONICS TO BE REMOVED FROM THE REAR OF THE SPEAKER AND MOUNTED OUTSIDE THE SOFFIT.

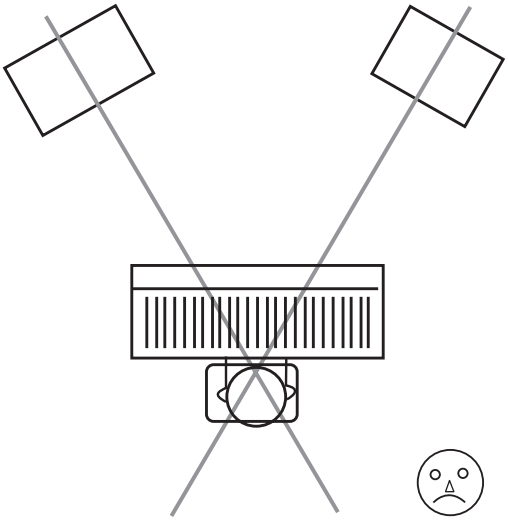
4.3. Aligning speakers

The speakers should be positioned so that the axis (an imaginary line drawn from the acoustic centre of the left and right monitor — see line drawing on page 13 of this manual) should cross between 1/2 and 1 meter behind the engineers position, for the following reasons:-

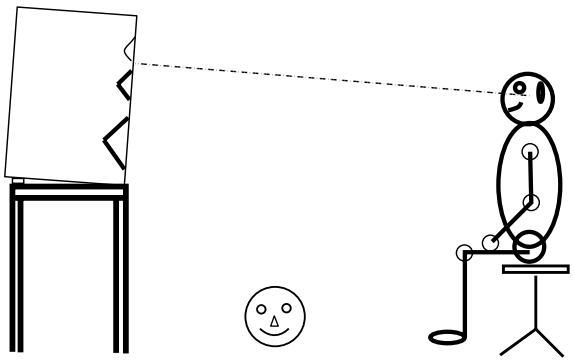
a) To obtain the most accurate imaging, both front to rear and side to side, and to obtain as large as possible listening area so that the engineer can move and operate the console without perceiving a change in character of the monitors.

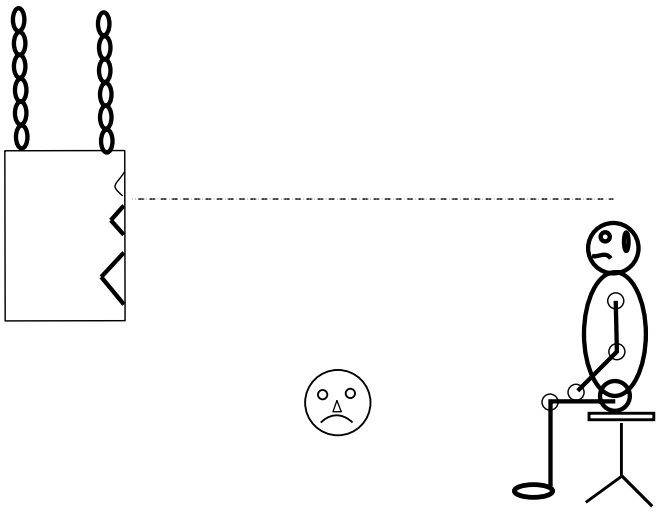
b) To enable listening for long periods of time without suffering strain or fatigue.





The height of mounting the speaker is equally as important. The correct height should result in the axis being at ear level when the engineer is sitting in his normal position at the console.



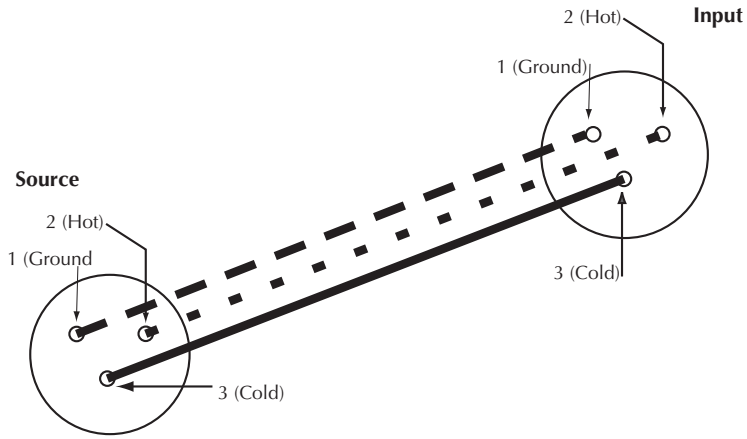


4.4. Audio connections

The audio signal input is RFI filtered and electronically balanced to ensure a high level of rejection for common mode interference signals and to give a professional connection to external equipment. It is essential for optimal use of these specifications that a professional grade balanced two core screened cable is used.

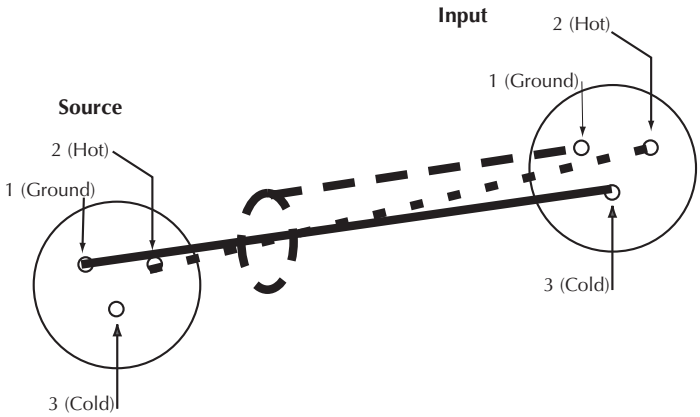
Source Balanced Pin 2 hot

In accordance with international standards 3 pin XLR style input connectors are utilised, with pin 2 being designated the 'in-phase' or 'hot' terminal and pin 3 the 'out of phase' or 'cold' terminal. Pin 1 is connected to the chassis ground and must be connected to the screen of the audio inter-connecting cable. This is necessary to ensure proper compliance with European Standards for Electromagnetic Compatibility. Pin 1 carries no signal voltages or currents and is provided purely for screening purposes. It should not be connected to either pin 2 or pin 3.



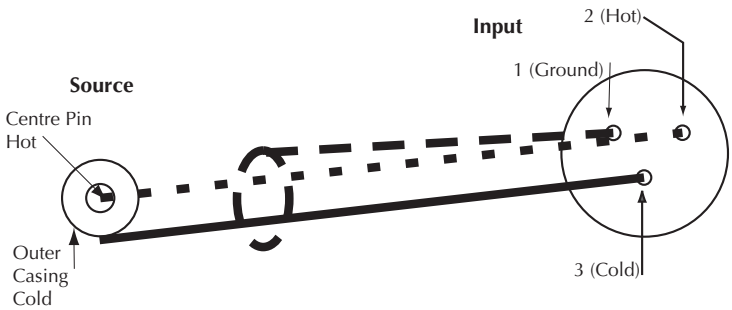
Source Unbalanced Pin 2 Hot

If the equipment providing the audio signal has an unbalanced output, then the interconnecting audio cable should be wired so the hot output of the source is connected to pin 2 of speaker input XLR and the ground of the source connected to pin 3. The screen of the interconnecting audio cable should be connected to pin 1 of the input connector only. There must be no connection between the ground connection of the unbalanced output and the pin 1 ground connection of the input connector.

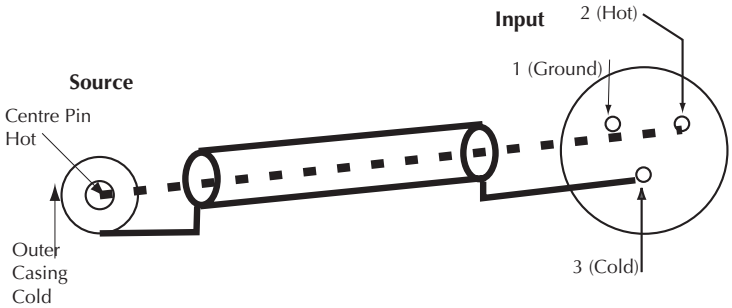


Source Unbalanced Phono

If the source output is a phono socket then the centre pin of the phono plug should be wired to pin2 of the speaker input XLR and the outer phono casing to pin 3. The wire from pin 1 of the XLR will not be connected to the terminals of the phono plug. strict adherence to this will help to eliminate ground loop hums and RF break through.



Source Unbalanced Phono 2 Core cable



5. OPERATIONAL CONSIDERATIONS

5.1. Mains On-Off Switching

On off switching is provided by a rocker switch on the left hand side of the rear panel adjacent to the IEC power connector. Intelligent circuitry ensures noiseless power-on and power-off modes.

5.2. Thermal.

The internal power amplifiers have their output devices mounted onto the blue finned heatsinks which causes them to heat up and reach temperatures well above that of ambient. The design is such that no forced cooling is necessary provided a sufficient free space can be maintained around the heatsinks to allow air to circulate freely. The internal monitoring circuitry, includes temperature sensing as part of its safe operating area. Should this detect unsafe temperatures the amplifier will automatically shut off and the front panel led indicator will show a red colour. Once temperatures have reached a safe operational level, the amplifier will automatically switch on again.

5.3. Signal Level.

Input sensitivity can be adjusted with the ten position rotary switch recessed in the rear panel by using a flat bladed screwdriver. The control has an 18dB range in 2dB steps and accurately sets the SPL level for a known input signal level. With the switch set at the 0dB position, 0dBu of pink noise will produce 100dB SPL at 1 meter.

5.4. Front Panel Indicator.

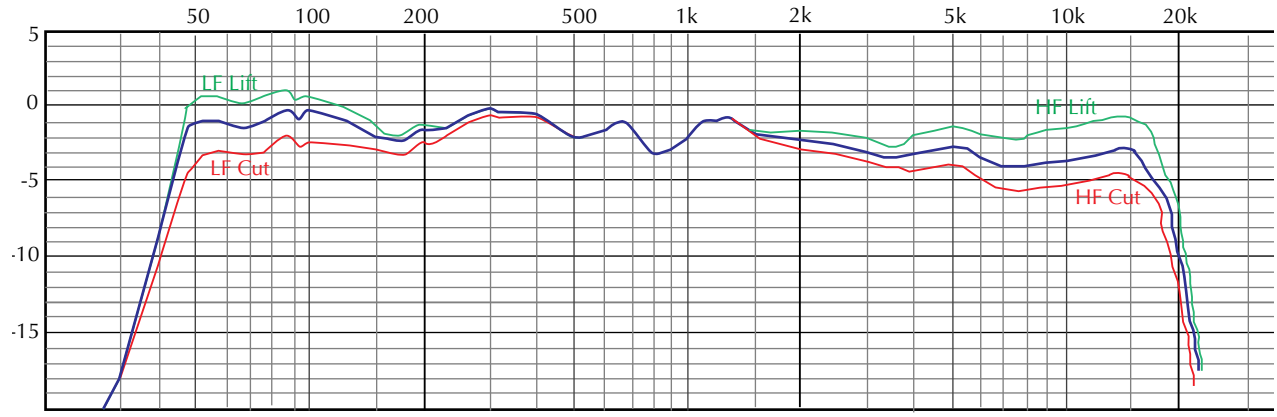
A two colour led indicator is provided that illuminates through the logo badge on the cabinet front. When mains power is applied the indicator will show as green, indicating correct operation.
When the power amplifiers are close to their maximum output power, the indicator will show as red for the period of time that the input signal level is excessive.
Should there be internal electronic faults, or overheating of the heatsinks, the indicator will show permanent red and the audio signal will be muted.

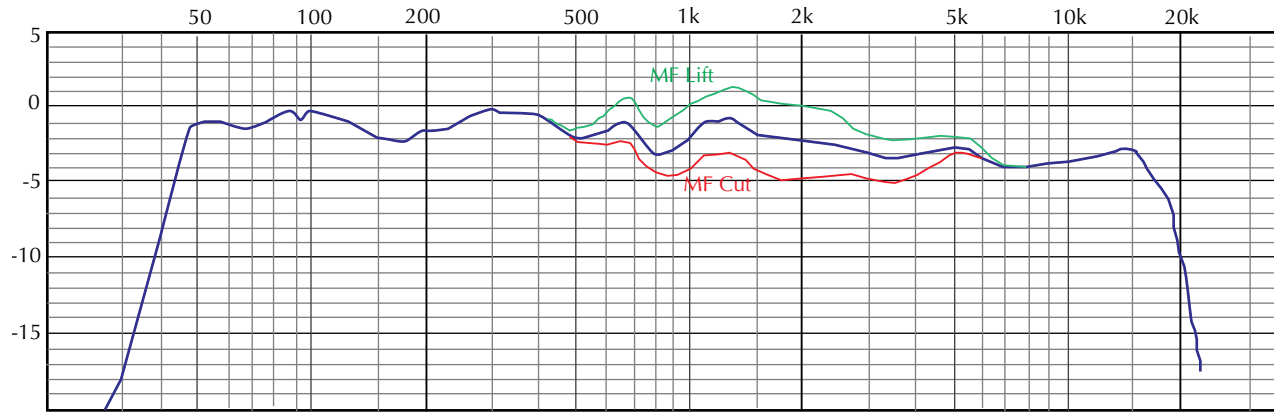
5.5. Contour Selectors.

Three rear panel switches allow the low mid and high frequency response to be trimmed to adjust for room conditions or personal preference. The 3 position HF CONTOUR switch should be set to OFF for a nominally flat HF response. The LIFT and CUT positions will respectively increase or reduce the gain above 5kHz by a nominal* 2dB. The 3 position MF CONTOUR switch should be set to OFF for a nominally flat mid response. The LIFT and CUT positions will respectively increase or reduce the gain between 500Hz and 3kHz by a nominal* 2dB. The 3 position LF CONTOUR switch should be set to OFF for a nominally flat low frequency response. The CUT position should be selected if an external sub is employed and reduces the response below 100Hz by up to 2dB while the LIFT position increase the response above 80Hz by a nominal* 2dB. The effects of the contour switches are shown on the frequency plot opposite.

** The effect of the contour selection is best seen on the frequency plot. The lift and cut has a gradual effect over the frequency stated and can only be quoted as a nominal value.*

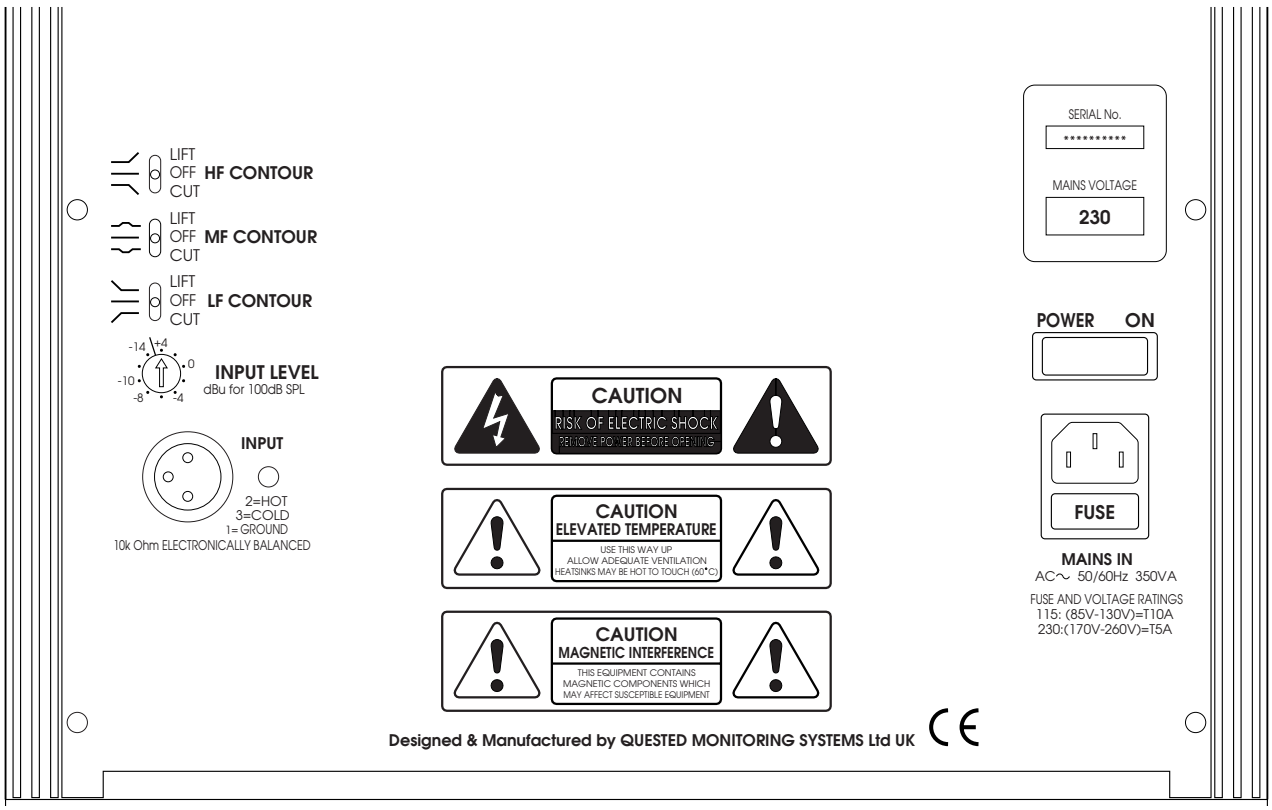
5.5. Frequency Plot





5.6. Rear Panel Detail

VS3208 rear panel showing lower portion only



6. Technical Specification

Size (w x h x d)	485 x 612 x 415mm (19″ x 24 1/4″ x 16 1/2")
Weight	47kgs (104lbs)
Drivers	Bass cone 2 x 200mm(8") Mid 1 x 75mm (3″) soft dome High Frequency soft dome 1 x 28mm (1 1/8")
Maximum SPL	112dB(C)
Frequency Response	40Hz - 18kHz ±2dB

INPUT

Connector:	XLR3 type-Female
Impedance:	10kΩ Electronically balanced with RF filters
Wiring:	Pin 1 ground Pin 2 hot Pin 3 cold
Sensitivity:	Rear mounted 10 position rotary switch calibrated in 2dB steps
Minimum sensitivity	+4dBu for 100dB SPL @ 1m: Max input level for clip >+16dBu @ 5kHz
Maximum sensitivity	-14dBu for 100 dB SPL @ 1m: Max. input level for clip >-2dBu @ 5kHz

FILTERS

Subsonic:	-3dB @ 16Hz, 12dB/oct (LF equaliser out)
Ultrasonic	-3dB @ 250kHz, 6dB/oct (HF equaliser out)
Crossover	1.25kHz, 24dB/oct.
User LF EQ:	3 position rear mounted switch to select FLAT for normal use, CUT for nom. 2dB cut below 100Hz and for use with external sub and lift for nom. 2dB LF lift below 80Hz
User MF EQ	3 position rear mounted switch to select FLAT for normal use, CUT for nom. 2dB cut and lift for nom. 2dB LF lift.in the frequency band 500 - 3kHz
User HF EQ	3 position rear mounted switch to select FLAT for normal use, CUT for nom. 2dB cut and lift for nom. 2dB LF lift above 5kHz.

POWER AMPLIFIER

LF output power:	> 230W rms continuous (note 1)
Mid Output	> 110W rms continuous (note 1)
HF output power	> 100W rms continuous (note 1)
THD	< 0.03% at levels up to 1dB below clip, 20Hz - 20kHz. typ 0.005% @ 20W rms 1kHz.
Hum + Noise	> -100dB referred to clip

note 1: The continuous rating is for a period not exceeding 5 minutes with unrestricted airflow (100mm clearance) around the amplifier heatsinks and ambient temperatures is <30°C

INDICATION

Power on:	Front mounted LED (green) indicates power applied
Overload	Front mounted LED flashes red 0.5dB below signal clip
Thermal protection	Front mounted LED turns red, signal is muted and amplifier switches to standby mode during thermal protection cooling cycle. Normal operation resumes when heatsink temperature drops by 20°C

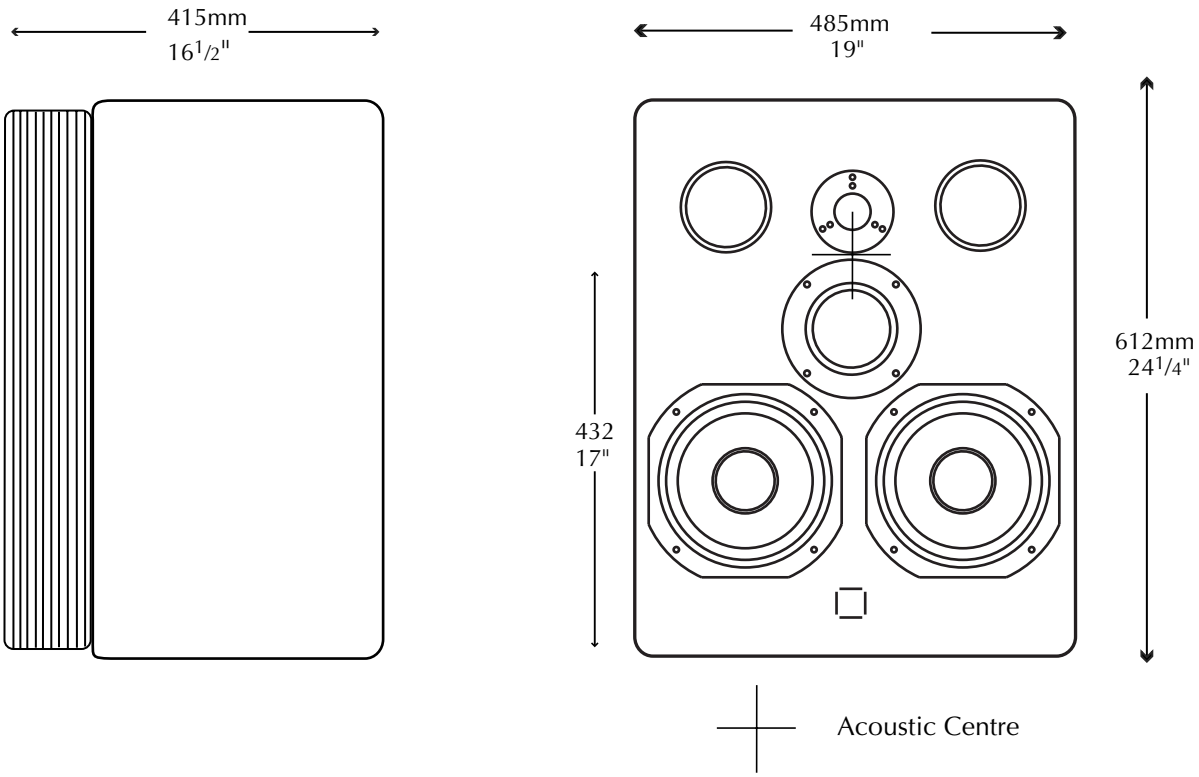
POWER REQUIREMENTS

Voltage:	Set by internal plugs: nominal 115V or 230V @ 50-60Hz AC. 230V setting: Min 160V (restricted output power): Max 263V 115V setting: Min 80V (restricted output power): Max 132V
CONSUMPTION	Quiescent 105W, Typical use 280W, Max 950W

Note 0dBu = 775mV into open circuit.

This product is built to conform to the requirements for CE marking.

7 Line Drawing



8. Guarantee

The VS3208 is guaranteed for 24 months from its date of purchase. If any part of the product is found defective due to faulty manufacture within 24 months from the date of purchase Quested, through its authorised distribution network, will effect repair or replacement, at its discretion, free of charge providing:-

a) The fault is reported to the authorised distributor.
b) Proof of purchase is provided.
c) The fault is not caused by, misuse, neglect, or faulty operation by the user.
d) The fault is not a result of fair wear & tear
e) The equipment has not been modified in any way.
f) The equipment has not been taken apart or tampered with in any way other than described in the service manual for the adjustment and replacement of user accessible items.

The guarantee does not cover

a) Damage during transit
b) Damage to diaphragms, cones and other speaker parts as a result of the over-driving of the monitors or by faulty installation or connection.
c) Damage caused by incorrect installation or during installation caused by incorrect handling.
d) The cost of carriage to or from the authorised repairer.

9. Appendix

9.1. Accessories

Accessory	**Part Number**
Magnetic shielding	
Shielded Tweeter	Q03-0011
Shielded Bass Driver	Q01-0026
Remote Mounting Kit	R20-0012

9.2. Spares

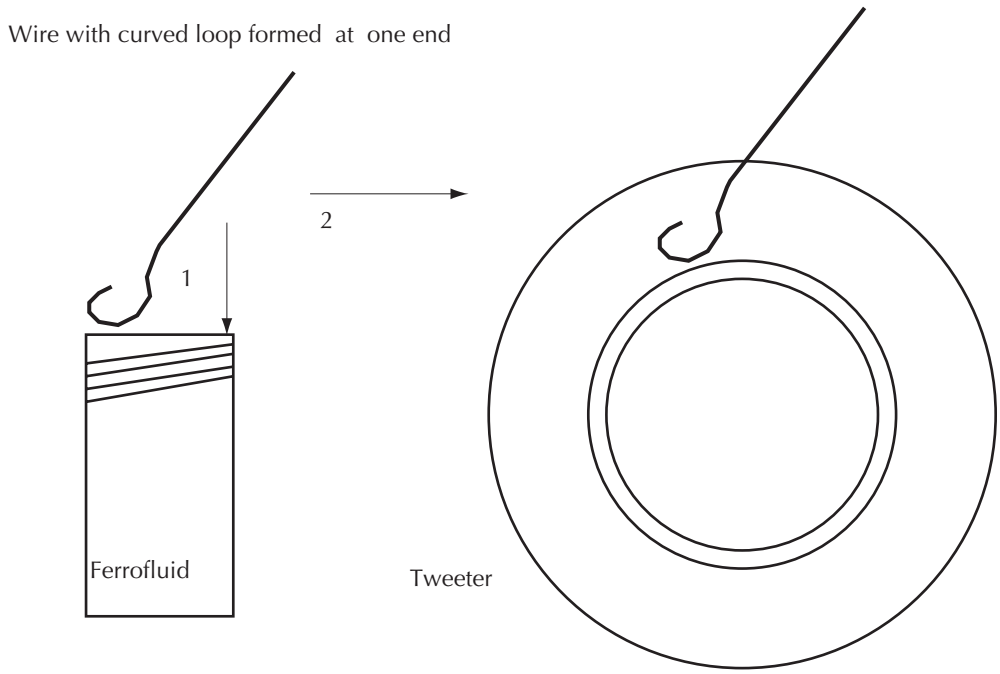
Spare part Description	**Part Number**
LS2207 200mm (8")Loudspeaker	Q01-0025
TW30 28mm ($1\frac{1}{8}$") soft dome	Q03-0010
MD75 75mm (3″) mid range softdome	Q02-0040
RD30 28mm ($1\frac{1}{8}$") soft dome diaphragm	Q53-0010
230v fuse 20mm T5 amp	L01-0024
115v fuse 20mm T10 amp	L01-0026

9.3 Driver replacement procedures

9.3.1 Tweeter and tweeter diaphragm

The tweeter is secured by 3 self tapping wood screws. Remove these with a posidrive no. 2 screwdriver. Take out the tweeter and disconnect the two wires, noting which colour goes to which terminal. If on removing the 3 screws that hold the tweeter there is any difficulty in removing the unit do not try to force a blade between the cabinet and tweeter, but use a small narrow bladed screwdriver in one of the screw holes to gently lever out the tweeter.
If it is necessary to replace the diaphragm

a) Remove the 3 machine screws on the front plate of the tweeter using a 2mm hex driver.
b) De-solder and unwind wires from the terminal tags
c) Remove diaphragm assembly and replace with the new diaphragm. The Ferrofluid has the appearance of oil and is dark brown in colour and should cover about 1/3 of the coil. If there is less than this then additional Ferrofluid should be added. This can be obtained from your dealer/distributor or directly from Quested. The ferrofluid reference is
It should be noted that ferrofluid is best added as shown in the diagram below. The fluid should never cover more than 1/2 the coil.
d) Wrap the wires from the diaphragm around the corresponding tags
e) Keep the wire slightly taught, but do not strain
f) Re-solder the wires and re-assemble.



Dip wire in ferrofluid, a small amount will be retained on the wire hold wire over the tweeter gap and the magnet will attract the fluid from the wire into the gap. Do this 3 or 4 times in different position on the tweeter, then check by inserting the new diaphragm to see the amount of fluid in the tweeter.

9.3.2 Mid range driver

No recone kit is available for the mid range so if a fault develops the unit will need to be replaced.
Remove the 4 self tapping wood screws using a posidrive no.2 screwdriver. Take out the unit and disconnect the two wires, noting which colour goes to which terminal. If on removing the 4 screws that hold the mid range there is any difficulty in removing the unit do not try to force a blade between the cabinet and mid range, but use a small narrow bladed screwdriver in one of the screw holes to gently lever out the unit.
Connect the new mid range and re assemble into the cabinet. Do not overtighten the 4 screws.

9.3.3 Bass driver and bass driver recone.

The bass drivers are held in by four M5 machine screws. Remove the screws in the order shown below using a 4mm hex driver The drivers are heavy so hold the driver by the frame when removing the last screw. Remove the bass driver, using a screwdriver in one of the screw holes to gently lever out the driver if there is any difficulty in removing the unit. Do not force a blade between the cabinet and driver. Disconnect the two wires, noting which colour goes to which terminal. Replace with the new driver and re-assemble in the reverse order.

A recone unit is available for the VS3208 bass driver. Instruction for reconing is included with the recone kit. However, unless you are familiar with the practice of reconing it is better to have the speaker reconed by someone who is experienced.