



Operating Instructions

for the

Q

Range

of

SUB-BASS SYSTEMS

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IMPORTANT SAFEGUARDS

1. Read all of these instructions.
2. Save these instructions for future use.
3. Unplug from the wall socket before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use near water.
5. Do not place on a stand or table, it may fall causing injury to a child or adult, and damage to the unit.
6. The unit should only be operated from the power source indicated on the panel of the amplifier.
7. Only use the power cord supplied.
8. Do not allow anything to rest on the power cord. Position the power cord such that it can not be walked on.
9. For added protection during a lightening storm, or when not in use for long periods of time, unplug it from the wall socket.
10. Never spill any kind of liquid on the unit.
11. Do not attempt to service the unit yourself, as removing the amplifier may expose you to dangerous voltages. Refer all servicing to your dealer.
12. Unplug the unit from the wall socket and refer servicing to your dealer under the following conditions:
 - a. When the power cord or plug is damaged.
 - b. If liquid has been spilled onto the unit.
 - c. If the unit does not operate properly by following the operating instructions.
 - d. If the unit has been dropped and damaged.
 - e. When the unit exhibits a drastic change in performance.

WARNING

This item is heavy. To avoid risk of injury, take care when handling.

WELCOME

Thank you for buying a REL "Q" range Sub-Bass system. Our "Q" range is carefully hand built using the finest materials available and is designed for maximum performance. This manual contains important safety information as well as helpful advice and should be carefully studied before connecting up.

WORLD WIDE WARRANTY

In addition to any local Warranty, REL offer a 3-year conditional Worldwide Warranty to the end user. It is done in collaboration with our Distributors.

The conditions of this Warranty are:

1. That REL receive the necessary registration details from the end user.
2. That these details are received within six weeks of purchase.
3. That the product is not exported from the country of purchase for at least eight weeks after purchase.
4. That any claim is accompanied by the necessary proof of purchase.
5. That it shall be for a term of 3 years from the date of purchase.
6. That the product has not been abused or modified in any way.
7. That it was purchased originally from a REL authorised dealer.

This Warranty is offered in good faith and is in addition to any statutory rights or existing Warranty that may be available to the end user.

Should your REL Sub Bass Unit give you a problem, please contact your dealer who will be able to make whatever arrangements are necessary to correct it.

SERVICE AFTER WARRANTY

Please contact your dealer in the first instance before returning any product directly to us. Should the unit need to be returned for any reason, all carriage costs will be payable by the customer. Losses or damage caused during transit are the customer's risk.

DESIGN SAFETY

This apparatus is designed to Class II specification and is double insulated, therefore it does not require to be earthed.

This apparatus is supplied with a fitted mains plug. For UK operation a 5 Amp fuse is fitted in the plug. Should the fuse need to be replaced use a similar rated fuse approved to ASTA or BSI 362. Do not use without the fuse cover in place. Replacement fuse covers are available from your dealer.


If for any reason the plug is cut off it must NOT be re used. Please dispose of any such plug safely. There is a danger of electric shock if the cut off plug is inserted into a mains socket.

IMPORTANT

The wires in the mains lead are coloured in accordance with the following code:

Green and Yellow	-	Earth
Blue	-	Neutral
Brown	-	Live

As the colours of the wires in the mains lead may not correspond with the markings identifying the terminals in the replacement mains plug, proceed as follows:

- The wire coloured Green and Yellow must be connected to the terminal marked with the letter "E" or with the earth symbol 
- The wire coloured Blue must be connected to the terminal marked with the letter "N"
- The wire coloured Brown must be connected to the terminal marked with the letter "L"

This product is CE marked and has been tested to ensure it satisfies all relevant standards.

It satisfies all relevant standards for Conducted Emissions, Radiated Emissions, Susceptibility and Immunity.

It also complies with the requirements relating to class II construction detailed in clauses 9 & 10 of BS EN 60065 1994

It also satisfies all relevant safety tests for consumer use provided it is used within the guidelines of this manual.

Main Features of REL Quake, Q108 (US ONLY), Q150E, Q200E, Q201E and Q400E

1. High level input and low level input. Also PC input on Quake and Q108
2. Separate volume controls for high level and low level inputs
3. Variable filter roll off control
4. Mode switch to control phase and low level filter bypass (Not on Q108)
5. All components of matching superior quality to achieve both long life and long term consistency of sound quality
6. Superior wood veneered finishes available for Quake and Q201E
7. *Set-Safe*® circuitry ensuring ultimate protection if overloaded.

INTRODUCTION TO 'Q' RANGE SUB BASS SYSTEMS

Many or most loudspeakers designed to reproduce low bass are specifically designed to emphasize the mid bass. This is the range from 30 to 70 Hertz. We at REL believe this is wrong. All of our designs are true sub bass systems, meaning they are designed to reproduce those very low frequencies that are felt rather than heard. This is because we believe that music is full range, as are sound effects on movies, and we intend our products to reproduce all of these sounds, not a narrow band.

The "Q" range models are equipped to allow you to take full advantage of AC3, Dolby Digital, DTS, MPEG 2 and any other digital sound format that includes a dedicated Low Frequency Effects (LFE) channel.

The dedicated LFE input meets the tough specification laid down for digital 3/2.1 channels, usually known as 5.1. The output is nominally flat from 25Hz - 120Hz. It has a dedicated input level control which enables users to set the LFE level independently of the processor. This is important because not all processors offer control over this significant parameter. The LFE channel is typically recorded at 10db higher levels than the other channels.

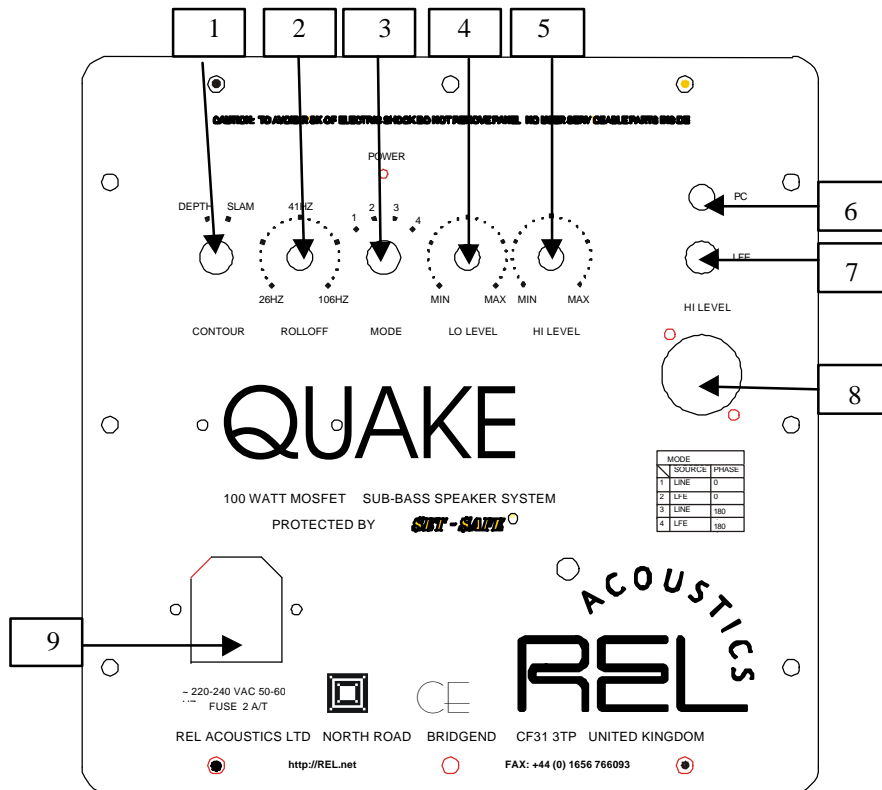
The "Q" range also has standard speaker level inputs with their own input level control. Uniquely, both the speaker level and the LFE input can be used simultaneously. This means you can set it up for an audiophile sound with your CD's or other stereo signals and instantly revert to using the Sub-Bass System as the dedicated LFE component when watching movies. This is a feature of real benefit if you wish to play music in stereo mode in the purist audiophile way and in full 5.1 digital mode. True flexibility!

On two models there is a 'Slam' and 'Depth' selector, (Q150E and QUAKE). 'Slam' mode allows you to choose a higher output level at 40Hz - 150Hz at the expense of maximum bass extension. This is an excellent 'party' mode where subtlety and ultimate fidelity is secondary.

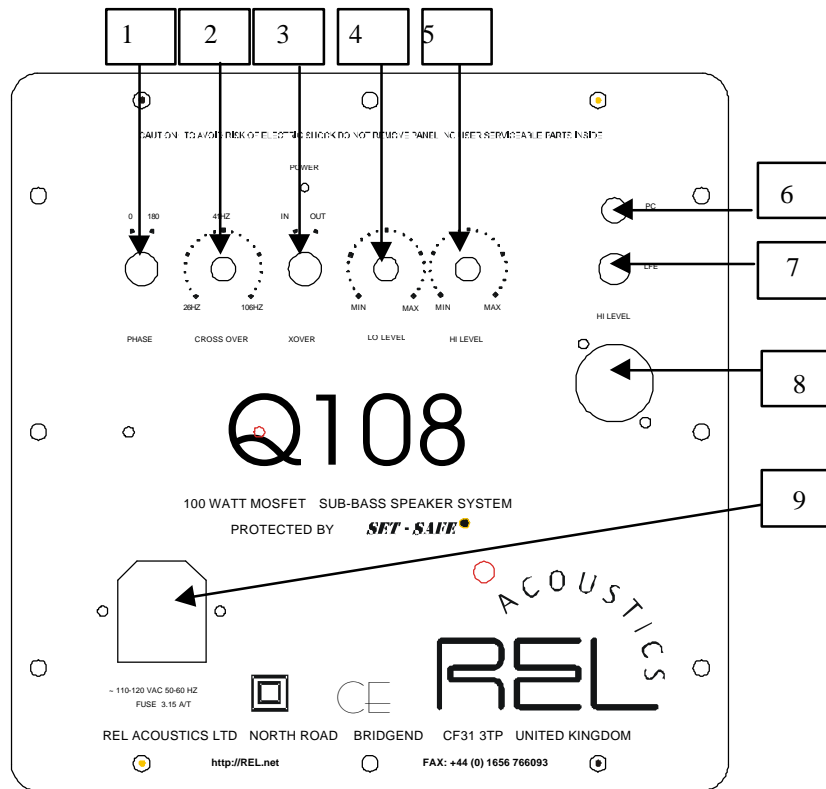
Alternatively the standard 'Depth' mode 20Hz - 100Hz provides maximum bass extension and is strongly recommended where the highest possible fidelity is demanded. This is ideal for people in pursuit of the absolutely highest fidelity.

See the specification table on pages 18 and 19 for features of the various models.

CONTROLS AND CONNECTIONS - QUAKE

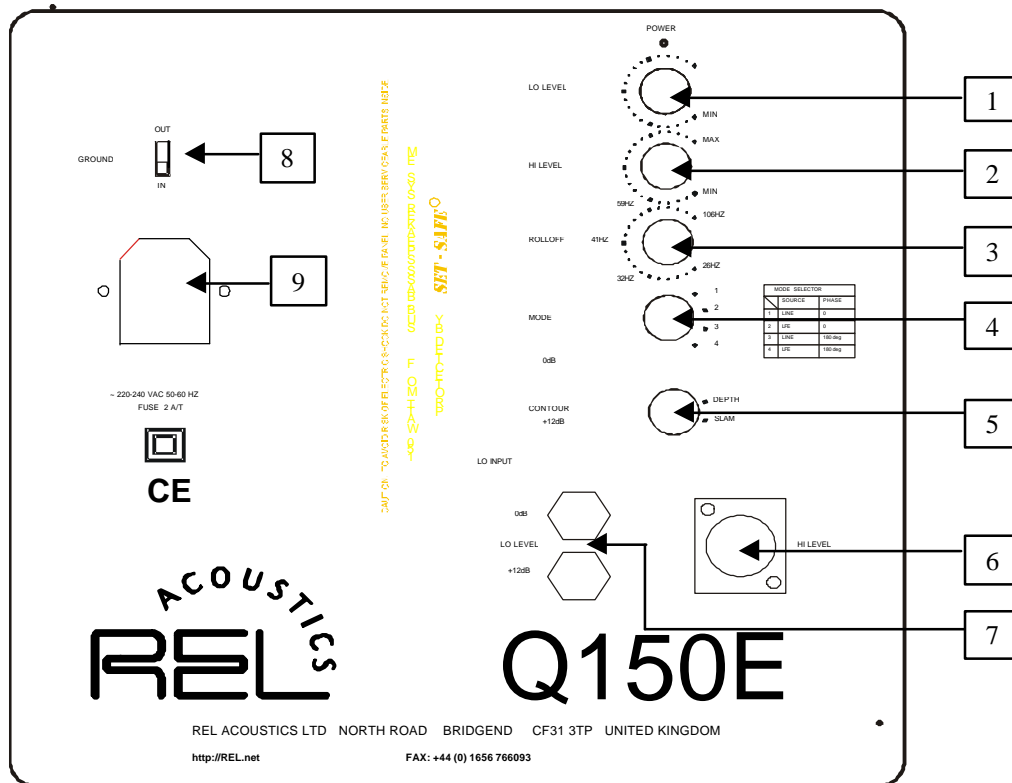


- 1 **Slam/Depth switch.** Changes the characteristics of the filter/roll off. Depth mode 20 – 100 Hz Slam mode bass emphasised 50 – 150 Hz. **ONLY FITTED TO QUAKE AND Q150E**
- 2 **Roll off control.** Adjust to set the upper roll off frequency of the Sub Bass System.
- 3 **MODE SWITCH.** Used to set phase* and to bypass crossover for Low Level input**.
Position 1 / Line: 0 degrees phase, crossover engaged low level input
Position 2 / LFE: 0 degrees phase, crossover bypassed for low level input
Position 3 / Line: 180 degrees phase, crossover engaged for low level input
Position 4 / LFE: 180 degrees phase, crossover bypassed for low level input
***PHASE SELECTION AFFECTS BOTH HI AND LO LEVEL INPUTS**
****Crossover is always engaged for Hi level input regardless of mode switch position.**
- 4 **LO LEVEL** input volume control. Adjust for output level when using LO LEVEL phono input or balanced line level input XLR socket.
- 5 **HI LEVEL** input volume control. Adjust for output level when using HI INPUT Neutrik socket or BAL HI INPUT Neutrik socket.
- 6 **PC input** 3.5mm jack socket. Used to connect the Sub Bass System to a computer.
7. **LFE input** phono socket. Used to connect the Sub Bass System to the LFE/Sub output of a 5.1 channel amplifier or processor.
8. **HI LEVEL** input Neutrik Speakon socket. Used to connect the Sub Bass System to the main front speaker terminals on the amplifier.
- 9 **IEC Mains** input socket.

CONTROLS AND CONNECTIONS - Q108 US MARKET ONLY

- 1 **PHASE** switch 0 and 180 degrees. Phase selection affects both high and low level inputs.
- 2 **CROSS OVER.** Adjust to set the roll off frequency of the sub bass system.
- 3 **XOVER.** Switches the **CROSS OVER** in or out. Only affects LFE input, always active for high level input.
- 4 **LO LEVEL** input volume control. Adjust for output level when using LO LEVEL phono input.
- 5 **HI LEVEL** input volume control. Adjust for output level when using HI LEVEL Neutrik input.
- 6 **PC.** Low level input 3.5mm jack socket. Used to connect the Sub Bass System to a computer.
- 7 **LFE** input phono socket. Used to connect the Sub Bass System to the LFE/Sub output of a 5.1 channel amplifier or processor.
- 8 **HI LEVEL** input Neutrik Speakon socket. Used to connect the Sub Bass System to the main front speaker terminals on the amplifier.
- 9 **IEC** Mains input socket.

CONTROLS AND CONNECTIONS - Q150E



1 **LO LEVEL** input volume control. Adjust for output level when using LO LEVEL phono input.

2 **HI LEVEL** input volume control. Adjust for output level when using HI LEVEL Neutrik input.

3 **Roll off control.** Adjust to set the upper roll off frequency of the Sub Bass System.

4 **MODE SWITCH.** Used to set phase* and to bypass crossover for Low Level input**.
 Position 1 / Line: 0 degrees phase, crossover engaged low level input
 Position 2 / LFE: 0 degrees phase, crossover bypassed for low level input
 Position 3 / Line: 180 degrees phase, crossover engaged for low level input
 Position 4 / LFE: 180 degrees phase, crossover bypassed for low level input

***PHASE SELECTION AFFECTS BOTH HI AND LO LEVEL INPUTS**

****Crossover is always engaged for Hi level input regardless of mode switch position.**

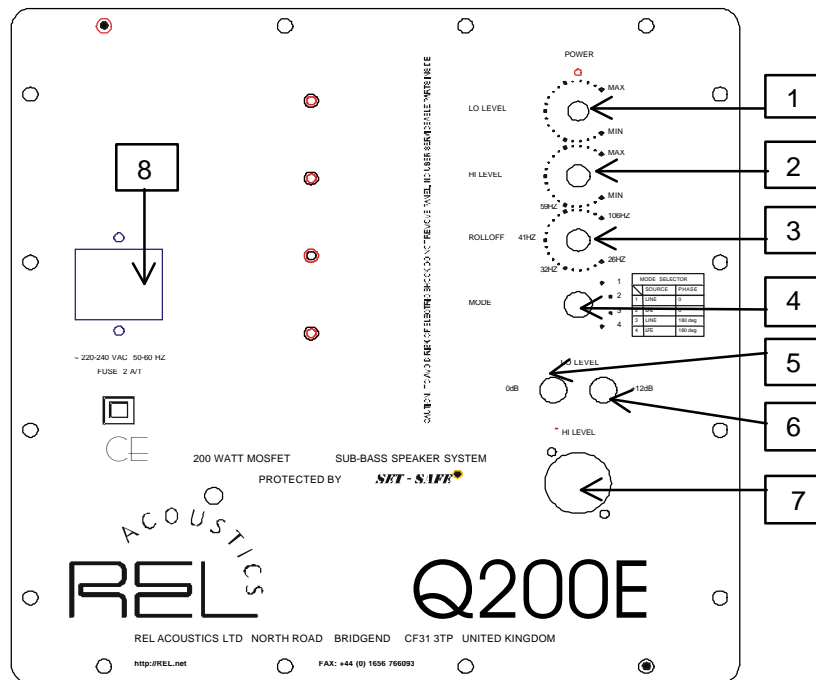
5 **SLAM/DEPTH** switch. Changes the characteristics of the filter/roll off. Depth mode 20 – 100 Hz. Slam mode bass emphasised 50 – 150 Hz. **ONLY FITTED TO QUAKE AND Q150E**

6 **HI LEVEL** input Neutrik Speakon socket. Used to connect the sub woofer at high level to the main speaker terminals on the amplifier using the supplied interconnect.

7 **LO LEVEL** input phono sockets. Used to connect the sub woofer at low level to the SUB/LFE output of the processor/amplifier or spare pre amplifier outputs.

8 **Ground switch.** Used to provide a physical earth connection to the sub if necessary. **Not fitted to Q400E (Q401E) and later Quake models.**

9 **IEC Mains** input socket.

CONTROLS AND CONNECTIONS- Q200E, Q201E, Q400E

- 1 **LO LEVEL** input volume control. Adjust for output level when using LO LEVEL phono input.
- 2 **HI LEVEL** input volume control. Adjust for output level when using HI LEVEL Neutrik input.
- 3 Roll off control. Adjust to set the upper roll off frequency of the Sub Bass System.
- 4 **MODE SWITCH.** Used to set phase* and to bypass crossover for Low Level input**.
- | MODE SELECTOR | PHASE | CROSSOVER |
|---------------|-------------|-----------|
| 1 | 0 DEGREES | ENGAGED |
| 2 | 0 DEGREES | BYPASSED |
| 3 | 180 DEGREES | ENGAGED |
| 4 | 180 DEGREES | BYPASSED |
- Position 1 / Line: 0 degrees phase, crossover engaged low level input
 Position 2 / LFE: 0 degrees phase, crossover bypassed for low level input
 Position 3 / Line: 180 degrees phase, crossover engaged for low level input
 Position 4 / LFE: 180 degrees phase, crossover bypassed for low level input
- ***PHASE SELECTION AFFECTS BOTH HI AND LO LEVEL INPUTS**
- ****Crossover is always engaged for Hi level input regardless of mode switch position.**
- 5 **0dB LO INPUT** phono socket. Used to connect the Sub Bass System at low level to the sub/LFE output of the amplifier/processor or left and right pre-amp outputs.
 If Lo Level inputs are used to connect pre-amp right and left outputs then a 12dB attenuator is available from REL to balance the two inputs.
 Alternatively, a high quality Y-adaptor may be employed to connect at either input as system gain characteristics demand.
- 6 **+12dB LO INPUT** phono socket. As 6 but a higher sensitivity. If LO LEVEL inputs are used connected to pre-amp right and left outputs then a 12 dB attenuator is available from REL to balance the two inputs.
 Alternatively, a high quality Y-adaptor may be employed to connect at either input as system gain characteristics demand.
- 7 **UNBAL HI INPUT** Neutrik Speakon socket. Used to connect the Sub Bass System at high level to the main speaker output of amplifiers.
- 8 **IEC Mains** input socket

CONNECTING UP

Always switch off your system before disconnecting any wires

To increase the versatility of connecting up, the "Q" range has two separate inputs. A Neutrik Speakon socket and a pair of phono sockets. (single phono socket on Quake and Q108). As mentioned, this is to facilitate use with both two channel stereo systems and AV surround sound systems.

The high level, unbalanced, dual channel (stereo) input is via a Neutrik Speakon connector which is connected to the power amplifier's left and right channel speaker terminals. This has the advantage of ensuring that the REL receives exactly the same signal as the main speakers. This means that the character of the bass from the main system is carried forward into the sub-bass. This is a very important point and together with the REL's Active Bass Controller (ABC), ensures far superior system integration of the sub-bass with the main system.

The low level input is via phono connectors and connects to the Sub/LFE output of the amplifier/processor. Two inputs are available, 0dB and +12dB, **(Single phono input on Quake and Q108 at +12dB)**, it is usual to use the 0dB input but if the Sub/LFE output level of the amplifier/processor is a little low then the higher sensitivity +12dB input can be used.

If the main speakers are active then again the low level input must be used and connected to the pre amplifier outputs. Because the low level inputs are 0dB and +12dB an attenuator is necessary to balance the two inputs, **Quake and Q108 are not suitable for this method of connection as it only has a single channel low level input.**

Quake and Q108 also have an input for connection to a PC, this is via a 3.5mm jack socket

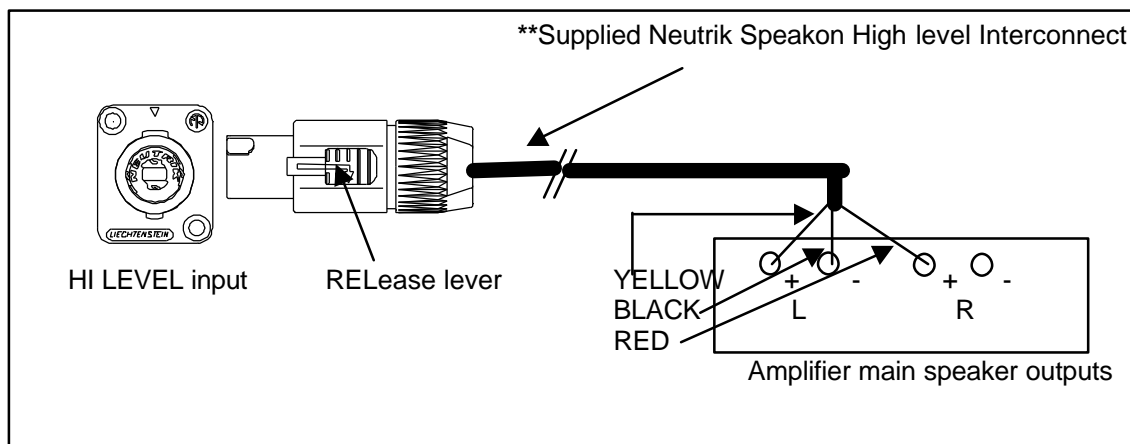
HI LEVEL and LO LEVEL inputs can be used simultaneously. The benefits are two-fold when used with a home cinema system. The low level input reproduces the .1 Sub/LFE channel and the high level connection underpins the main front speakers. The main front speakers should be set to the 'large' option on the processor. **See "SETTING UP"**

To connect to the power amplifier using the UNBALANCED Neutrik high level input.

To engage the Neutrik Speakon plug, insert fully into socket and rotate clockwise until locked.

To remove the Neutrik Speakon plug, grip body of plug, place thumb on chrome lever, move lever backwards rotate plug anti-clockwise (counter-clockwise in the US) quarter turn and withdraw.

The high level input is designed to accept the stereo (two channel) signals from the speaker terminals of your receiver, integrated amplifier, and basic amplifiers. This has the advantage of ensuring that your subwoofer receives exactly the same signal as the main speakers, which means that the character of the bass from the main system is carried forward into the sub-bass. This is a very important point and together with the REL's ABC circuitry, ensures far superior system integration of the sub-bass with the main system.



**** NOT SUPPLIED WITH QUAKE**

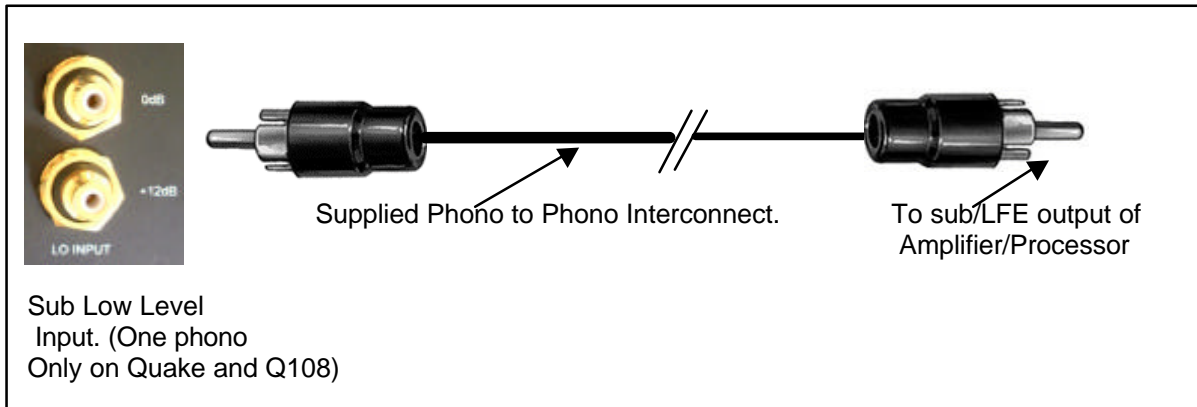
High Level connections should be made to the same binding posts as the main speakers.

Connect as shown above. Red to amplifier main right speaker red terminal, yellow to amplifier main left speaker red terminal and black to amplifier main speaker black terminal, right or left but not both. Plug the Neutrik Speakon plug into the HI LEVEL Neutrik socket.

The output level is adjusted using the control marked HI LEVEL.



To connect to the amplifier/processor using the phono to phono low level interconnect



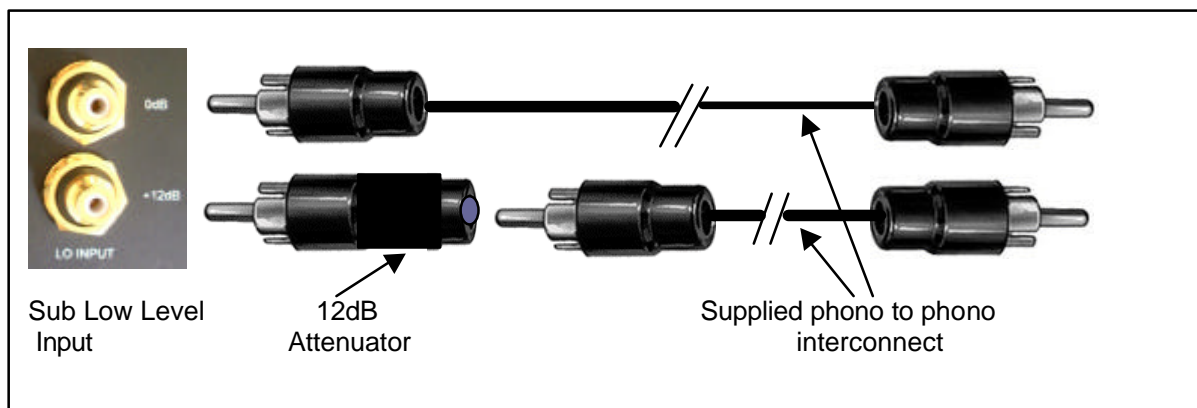
Two low level inputs are provided, 0dB and +12dB, **One only on Quake and Q108 at +12dB**. Connect as shown above. Although a twin phono to phono interconnect is supplied, only one core need be used, either the red or the black. Plug one end into the sub/LFE output on the amplifier/processor and the other end into the 0dB input (single input on Quake and Q108) on the sub woofer. On the models with two low level phono inputs, if the output is too low when using the 0dB input then use the more sensitive +12 dB input.

The output level is adjusted using the control marked LO LEVEL



If the low level connection is to be made to left and right pre-amp outputs then a 12dB attenuator is available to balance the 0dB and +12dB phono inputs. See below.

One Q108 not suitable for this type of connection. Two Q108 units would be required.



MODE SELECTOR**(NOT APPLICABLE TO Q108)**

POSITION	SOURCE	PHASE
1	LINE	0
2	LFE	0
3	LINE	180 DEG
4	LFE	180 DEG

The mode switch is a dual function control, it can reverse the phase for both high level and low level inputs and it can bypass the internal filter/roll off.

Phase reversal is rarely needed but can be useful as explained in "SETTING UP" .

MODE SWITCH. Used to set phase* and to bypass crossover for Low Level input**.

Position 1 / Line: 0 degrees phase, crossover engaged low level input

Position 2 / LFE: 0 degrees phase, crossover bypassed for low level input

Position 3 / Line: 180 degrees phase, crossover engaged for low level input

Position 4 / LFE: 180 degrees phase, crossover bypassed for low level input

***PHASE SELECTION AFFECTS BOTH HI AND LO LEVEL INPUTS.**

****Crossover is always engaged for Hi level input regardless of mode switch position, bypassing is only possible for the low level input.**

Q108 CONTROLS

On the Q108, US model, the MODE SWITCH has been replaced with two separate controls namely phase and LFE XOVER.

The PHASE switch has two positions, 0 and 180 degrees.

The LFE XOVER switch is marked IN/OUT. At its IN position the CROSSOVER control is active. At its OUT position the CROSSOVER control is bypassed. This means that the Q108 will reproduce the full range of the LFE/SUB output of the amplifier/processor, or the limit can be set on the processor if it has this facility.

The CROSSOVER is always active for the HI LEVEL input.

Other controls are the same as for Quake.

REL Set-Up Made Simple

REL products are not traditional subwoofers, but true sub-bass systems. A REL is designed to augment the performance of "full range" speaker systems, to provide linear response down to below 12 Hz (Studio III, -6 dB down at 9 Hz). Therefore, for the moment, set aside everything you've been taught about subwoofers and how they are integrated into a stereo or theatre system. REL sub bass systems set-up and positioning differs from other subwoofers. A REL will take advantage of physics and room acoustics to provide deep pressurisation as no other sub-woofer can. It's important that you bring to the set-up process a willingness to do things a little differently in order to obtain these superior results. The end result of your labours will be an utterly seamless integration of true deep bass to a sound system, regardless of the main speakers low bass capability.

Two Things Before You Begin

- A. It is helpful to know that you will almost always connect the REL to the input on the rear panel labelled "Hi Level." This connection is made using the supplied 34' 10" (10 meters) cable, the bare leads of which connect to the speaker output terminals of the power amplifier. The easy and foolproof connection at the REL is done with a Neutrik Speakon connector. The purpose of connecting to the speaker output terminals is one of the unique secrets of REL's success. By connecting to the high level input on the REL from the amplifier, you build forward the sonic signature of your main system, including the tonal balance and timing cues of the entire electronics chain. In this way, the REL is fed the exact signal that is fed to the main speakers.
- B. When possible, the REL should be placed in one of the corners behind the speakers. Remember, we are dealing with true LOW bass pressurisation with RELs, not the mid-bass that most competitors settle for. Low bass pressurisation below 40Hz is best derived from corner placement, where the most linear and efficient low bass can be produced.

Basic set-up should take no more than ten to fifteen minutes to accomplish once connected.

Connecting

High-level connection, using the enclosed cable with the Neutrik Speakon connector, is always the first choice. By connecting to the amplifier's speaker outputs the sonic signature of the entire amplification chain is folded into the signal for the sub, thereby keeping timing and timbre cues consistent. In other words, the signal sent to the REL is exactly the same signal sent to the speakers, allowing for seamless integration. This connection can be made without affecting the performance of the amplifier because the sub's amplifier input impedance is 100,000 ohms. This scheme also avoids adding any detrimental effects by not interposing any additional electronics into the amplification chain.

- The standard high level hook up procedure is: attach the red wire to the amplifier's right positive speaker output terminal; attach the yellow wire to the amplifier's left positive speaker output terminal; attach the black wire to which ever of the amplifier's ground output terminals is convenient; plug the Speakon connector into the sub's high level input.
- For differential amplifiers using one sub, simply use the standard connecting scheme with the exception of connecting ground to chassis ground, not to speaker output ground, and then connecting into the high level input (Hi Input or Unbal Hi Input on Stentor III and Studio III).
- For differential amplifiers using two subs, one for each channel: connect red to positive; yellow to negative; and black to chassis ground; plug the Speakon into the balanced high level input (Bal Hi Input).

Low-level connection, RCA inputs (or XLR on some models), is always an option, should high-level connection not be possible, or in a theatre system where both high-level and low-level connection should be used. When connecting to the low level inputs, connect a single RCA cable to the 0dB RCA jack. Additional gain can be achieved by connecting to the +12dB input. If you are connecting two channels of stereo output from a pre-amplifier, simply use a high-quality y-adapter to sum the two signals together.

Positioning

The optimal position for a REL is in one of the corners behind the main speakers. This position provides 9 dB of mechanical amplification and allows for the most linear true low bass wave launch, owing to the ability to tune the sub to the axial node of the room, or longest throw distance.

The Process

To begin the set-up process, choose a piece of music that has a repetitive bass line that is very low in frequency. We recommend cut 4 from the soundtrack to Sneakers (Columbia CK 53146). This has a repetitive bass drum throughout that gives you plenty of time to move the woofer around, but more importantly, the recording venue was quite large for this recording, and therefore it has a very deep and large-scale bass signature. This type of cut is perfect for the set-up process, and should be played at the highest reasonable level expected for system play back.

Working with a partner, one in the listening position and one at the woofer manipulating the controls, is the most effective and efficient ways to set up the woofer. If working alone, the initial steps in the set-up can very effectively be carried out from the location of the woofer. Trying to ignore all other music in the cut, listen for the bass drum and its effect on the listening room.

1. **Phase Orientation:** Once in the corner we need to adjust for phase. This may be the single most critical step, and because it really is quite simple, it is often over thought, especially by the most experienced audiophiles. Keep in mind; the right phase is whichever position is the loudest or fullest. While playing music with true low bass, adjust the crossover to a point where the sub and the speaker are sure to share frequencies (B, 3 for big speakers or C, 4 for smaller speakers). At this point turn the gain so that both sub and speaker are roughly equal and then switch, using the "mode selector" switch, from "0" (position 1) to "180" (position 3) phase positions. Again, whichever position is loudest or fullest is the correct position, and, as often as not, may be 180-degree phase. That is, this position is working in harmony with your main speakers, reinforcing bass, and not cancelling it.
2. **Room Orientation:** Next, if space allows, try two different orientations of the woofer relative to the wall. First, while playing the set-up cut, place the REL with the connection panel parallel with the rear wall. Second, place the REL with the connection panel parallel with the side wall. As with phase, the orientation which yields the most output is the best position for that room. This process simply orients the driver, and port, to most efficiently vent into the room. In some instances there may be little difference, at which point aesthetic concerns may override performance concerns. For Q series, if possible, point the driver directly out of the corner, equidistant from the side walls.
3. **Placement:** The next step is to determine precisely how far out from the corner the sub should be placed to achieve the most efficient output, as well as the lowest frequency extension. With the sub fully into the corner, continuing to play the music, slowly pull the sub from the corner on the diagonal, equidistant from both side and rear wall. At a certain point (sometimes a matter of only a few inches, in rare cases a foot or more) the sub will audibly go lower, play louder, and, if it truly locks on to the room and is fully pressurising it, the air around the sub will seem to be energised, stop right there! This is the correct position for the sub.
4. **Crossover and Gain Settings:** To determine the crossover point, bring the gain down, put the crossover to A-1, bring the gain back up to the point where you have achieved a subtle balance (In some situations where there may not be sufficient output due to room and subwoofer interactions B-1 should be the position to use in setting initial gain). Working only with the coarse control (A-D), bring the crossover point up until it is obviously too high, at this point bring it down to the next lowest setting. Now, working with the fine control (1-6), bring up the crossover point until it sounds too high at which point bring it back down to the next lowest setting. For all intents and purposes, this is the correct crossover point. Once this stage has been reached subtle changes to gain and crossover can be accomplished to provide the last bit of complete and seamless integration. With that, set-up is complete.

Note: As the Q-series crossover adjustment uses a single variable control, use the closest correlating position to any of the crossover settings noted above for ST series models. Ultimately, as with the click stops of the ST range, simply bring gain and then crossover up until excess output is achieved, then back down a soft-click or two.

Hint: There is a tendency among audiophiles to set the crossover point too high and the gain too low when first learning how to integrate a REL with the system, the fear being one of overwhelming the main speakers with bass. But in doing so, the resulting set-up will be lacking in bass depth and dynamics. The proper crossover point and gain setting will increase overall dynamics, allow for extended bass frequencies, and improve soundstage properties.

Note, gain must be adjusted in conjunction with crossover changes. In general, when selecting a lower crossover point, more gain may need to be applied.

Theatre and Film Applications: For Dolby Digital AC-3® or other 5.1 theatre systems, once the standard set-up for two-channel outlined above is complete, the LFE output from the processor or receiver should be connected to the low-level input and appropriate gain adjustments made. It may be necessary to take the crossover out of the low-level input using the "mode" switch if extra upper bass output is called for. Keep phase consistent with what was selected during high-level set-up by simply choosing the corresponding setting (1 = 2, 3 = 4). For this configuration, you must set the processor to the "large" or "full range" setting for the left and right speakers in order for the REL to receive the bass signal via the high-level cable. In this configuration, the REL provides support for both the left and right speakers for two-channel listening, and support for the LFE when movies are playing. Most processors will allow you to defeat the subwoofer output when listening in the two-channel mode. The effect of this set-up is one of greatly increased dynamics in the mid-bass range, no bass bloat, and a greater degree of space and timing from the Foley effects. For an even greater sense of space and impact, a second woofer connected in parallel to the centre channel will prove to be a dramatic improvement as well. And if that is not enough fun, a rear sub, both to support the rear channel speakers as well as to evenly distribute LFE through the room, truly completes the full-range sonic picture for state-of-the-art film reproduction. A comprehensive set-up paper for home theatre will be coming very soon.

Other Tips: Generally speaking, do not use the supplied spikes. RELs work on the principle of the driver in a high-pressure zone relative to the floor. Spiking the REL will decouple the woofer from the floor, which will lean out the bass response. If the floor is an older, very "springy" floor, spikes can be useful in reducing the influence of the REL on the floor. But better yet, a heavy stone slab placed under the REL will work better. Even if you intend to use the spikes, do NOT insert them until completion of the set-up process. After which, subtle adjustments to crossover and gain may be necessary.

REL Set-Up Made Simpler

Connecting

High-level connection, using the enclosed cable, is always the first choice. The standard high level hook up procedure is: attach the red wire to the amplifier's right positive speaker output terminal; attach the yellow wire to the amplifier's left positive speaker output terminal; attach the black wire to whichever of the amplifier's ground output terminals is convenient; plug the connector into the "Hi Level" input. For connection to a differential amplifier consult your dealer.

Positioning

Primary Placement, for a REL is in one of the corners behind the main speakers.

Phase Selection is the next step. Keep in mind; the correct phase is whichever position is the loudest or fullest. While playing music with true low bass, adjust the crossover to a point where the sub and the speaker are sure to share frequencies (B, 3 for big speakers or C, 4 for smaller speakers). At this point adjust the gain so that both sub and speaker are roughly equal in output and then switch, using the "mode selector" switch, from "0" (position 1) to "180" (position 3) phase positions. Again, whichever position is loudest or fullest is the correct position, and, as often as not, may be 180-degree phase (see enclosed "Control Panel" section from the owner's manual).

Orientation. With phase correct, it is important to site the woofer in the corner by determining which wall, the side or the rear, the REL's amp should face. Flip the sub back and forth in the corner, and, again as with phase, whichever position sounds the loudest is the correct orientation for the sub. For Q series, if possible, point the driver directly out of the corner, equidistant from the side walls.

Final Position. The next step is to determine precisely how far out from the corner the sub should be to achieve the most efficient output, as well as the lowest frequency extension. With the sub fully into the corner, continuing to play the music, slowly pull the sub from the corner on the diagonal, equidistant from both side and rear wall. At a certain point (sometimes a matter of only a few inches, in rare cases a foot or more) the sub will audibly go lower, play louder, and, if it truly locks on to the room and is fully pressurising it, the air around the sub will seem to be energised. Stop right there! This is the correct position for the sub.

Adjusting

Crossover Selection. To determine the crossover point, bring the gain down, put the crossover to A-1 (or B-2 should output not be sufficient), and then bring the gain back up to the point where you have achieved a subtle balance. Working only with the coarse control (A-D), bring the crossover point up until it is obviously too high, at this point bring it down to the next lowest setting. Now, working with the fine control (1-6), bring up the crossover point until it sounds too high, at which point bring it back down to the next lowest setting. For all intents and purposes, this is the correct crossover point. Once this stage has been reached, subtle changes to gain and crossover can be accomplished to provide the last bit of complete and seamless integration. For Q series, use the variable controls in much the same way, slowly turning up both gain and crossover until excess output is realised, then back down a soft-click or two.

Including Theatre

Multi-channel systems LFE output should be connected to the low-level input and appropriate gain adjustments made at this point. It may be necessary to take the crossover out of the low-level input using the "mode" switch if extra upper bass output is called for. Keep phase consistent with what was selected during high-level set-up by simply choosing the corresponding setting (1 = 2, 3 = 4). When connecting to the low level inputs, connect a single RCA cable to the 0dB RCA jack. Should additional gain be required, connect to the +12 dB input.

RUNNING IN

Care taken over running in will be rewarded by many years of pleasurable use. Both the electronics and the drive unit will benefit from an initial period of carefully controlled use. Possible damage may be sustained by running in the unit at too high a volume setting over an extended period. On the other hand, by taking a little care over this initial period, about 24 hours of actual use, a longer life with a higher potential eventual performance is assured.

CARE AND POLISHING

Grittex (sprayed) finishes:

These are best maintained by careful dusting with a lint free cloth. Alternatively, a soft bristled brush may be used to sweep off any dust failing on the surface. If objects are to be placed upon the top, it is advisable to use a small mat to protect the surface and to avoid the risk of rattles.

Wood veneer finishes:

Dusting as above, plus the occasional polishing with a good quality furniture polish for the wood veneers. Treat the finish as you would any other piece of quality furniture in your home.

TECHNICAL

The ground switch (**if fitted**) provides a physical mains earth connection to the Sub Bass System if required. When the unit is connected up and switched on, listen for any 'hum' from it, if 'hum' is present then change the ground switch position from in to out (on to off for US market) or vice versa. In the in (on) position the mains earth is connected, in the out (off) position the mains earth is disconnected.

The "Q" range models use an unusual method of bass loading. They are designed to operate below normal system resonance, at least over some of their operating range. This has been achieved without the normal form of bass boost or electronic equalization. Instead of a constantly increasing bass equalization response, we simply ensure there is sufficient amplifier gain to drive the speaker unit to its maximum excursion level at whatever the designated lowest operating frequency is, (25 Hertz for the "Q" range models), and then cut the bass at a controlled rate of 12 dB per octave above this frequency. Although this may at first seem identical to boosting the bass, it is actually quite different and ensures that the timing of transients is far improved compared to the usual bass equalization used. We call it Zero-Q loading. The main benefit is no obvious boom or bloom to the bass. Bass will sound cleaner and faster. For maximum performance we believe the electronics, cabinet and the drive unit should all be designed to work together.

The amplifier is fully DC coupled to avoid phase shifts and compromises in its low end performance. The three filter stages, each operating at different frequencies, are Sallen and Key two pole (12db/octave) using high quality components. The filter capacitors are the highest quality 1% tolerance nitrogen filled polystyrene types with an indefinite shelf life. This means they are inherently stable and will retain their characteristics over very long periods of time - important in a unit designed for an exceptionally long working life. The Q400 has six high current output devices, the Q150E/Q200/201E has four high current output devices and the Quake/Q108 has two high current output devices to ensure maximum current delivery and long term thermal stability. These amplifiers are designed to withstand reasonable abuse and overloads.

As with all other REL units, care has been taken to deliberately over engineer it to withstand up to 300 Volts mains input. This ensures a robust, long lasting device.

OVERLOAD PROTECTION

All REL Sub-Bass Systems are designed as true sub-bass speakers. They are designed to reproduce those exceptionally deep notes that are felt rather than heard. This it will attempt to do at whatever volume level you set. If set too high no damage should result because the built-in electronics will limit the cone movement. This electronic control is called **set-safe**. It constantly and instantaneously monitors the output from the power amplifier and is totally transparent in operation until required. This means it has absolutely no effect on the sound quality of your REL until an overload is detected.

Ordinarily an overload would cause the power amplifier to go into clipping with resultant loss of control over the drive unit. This can cause drive unit damage and always sounds nasty. **Set-safe** detects the point of incipient clipping and gently soft clips the waveform of the signal to ensure actual clipping does not occur. This is a necessarily simplified version of what actually happens, but it effectively controls the amplifier and ensures there is minimum risk of amplifier and driver damage caused by over-driving.

A thermal overload device is fitted to **Quake/Q108**. If the unit is deliberately overdriven this device will sense the temperature rise and cut the output, recovery time is approximately five minutes. If this happens it is a warning that the unit is being overdriven and the gain control should be reduced to a safe level.

Although everything possible has been done to minimize risk of thermal overload failure, there can be no defense against those individuals who deliberately abuse the device. Such damage is NOT covered by Warranty. Please remember your REL is there to supplement your main system, not overwhelm it.

POWER SAVING EFFICIENCY

All REL Sub-Bass Systems are designed for maximum power efficiency, both when passing a signal through to its resultant output sound into the room and also when silent.

REL circuitry is designed for "power starvation" operation under no signal conditions. This means that immediately when there is a gap in the signal the sub is instantly at maximum power saving efficiency, yet remains at maximum readiness to respond immediately to a sudden transient signal, such as an explosion in a movie, even after a long quiet period and at whatever level.

This compares to some "auto power on/off systems" which remain powered up for a set period of no-signal condition (up to 10-15 minutes) and which need to power-up on receipt of a sudden transient thus failing to catch the start of that transient. There is also the possibility of the sub remaining inoperative during listening sessions where the overall volume is low.

It is not necessary to switch off between listening sessions - it will not significantly shorten its life by leaving it switched on. On the other hand, it will not harm sound quality if it is always switched off. The power consumption in the quiescent (no signal) state is negligible. REL's power starvation technology uses less than 4w when idle (less than 1/25th the power of a standard light bulb).

It is perfectly safe under all normal domestic circumstances as it is fully protected by internal fuses and an external mains fuse in the sliding drawer of the mains input socket, with a spare inside this drawer.

SPECIFICATIONS

MODEL	QUAKE/Q108	Q150E
Type	Closed box working below system resonance using the unique REL Zero-Q loading system	
Enclosure volume Litres	11	17
Drive unit	200mm long throw, steel chassis	300mm long throw steel chassis
Lower frequency response in room at -6dB	23Hz	19Hz
Input connectors	Hi Level Neutrik Speakon Lo Level single phono PC 3.5mm jack	Hi Level Neutrik Speakon Lo Level twin phonos 0dB and +12dB
Input impedance Ohms	Hi Level 100k Lo Level 2.5k PC 2.5k	Hi Level 100k Lo Level 0dB 10k Lo Level +12dB 2.5k
Gain control range	80dB	80dB
Power output (RMS) Watts	100	150
Mode selector	Yes, see page 13 / not Q108	Yes, see page 12
Phasing	Positive or reversed, page 13	Positive or reversed, page 13
Phase switch	Q108 only, see page 13	
LFE crossover switch	Q108 only, see page 13	
Amplifier type	DC coupled Mosfet	DC coupled Mosfet
Protection System		
1. Fully electronic with <i>SET-SAFE</i>	Yes	Yes
2. D.C. Fault	Yes	Yes
3. Output short	Yes	Yes
Mains input voltage	220-240 volts, 110-120 volts for certain markets	220-240 volts, 110-120 volts for certain markets
Fuses	2 Amp semi delay 230 volts operation 3.15 Amp semi delay 110 volts operation	2 Amp semi delay 230 volts operation 3.15 Amp semi delay 110 volts operation
There Are No Internal User Replaceable Parts		
Dimensions mm Inc feet and rear panel controls	(WxHxD) 25.3 x 29.4 x 27.2	(WxHxD) 290 x 320 x 330
Dimensions inches Inc feet and rear panel controls	(WxHxD) 9.96 x 11.57 x 10.7	(WxHxD) 11.43 x 12.61 x 13.01
Net weight Kg (lbs.)	7.4 (16.28)	11 (24.25)
Supplied Accessories		
Mains lead	Yes	Yes
Neutrik Speakon Interconnect 10 Metres nominal	Not Quake, Q108 Only	Yes
5 metre phono interconnect	Yes	Yes
Users manual	Yes	Yes
Spikes	Yes	Yes
Nylon Screws	No	Yes
Nylon Feet	Yes	Yes
Grille	No	Yes

In the interest of product development, REL Acoustics Limited reserve the right to vary these specifications without notice.

SPECIFICATIONS (Cont.)

MODEL	Q200E/Q201E	Q400E (Q401E USA)
Type	Closed box working below system resonance using the unique REL Zero-Q loading system	
Enclosure volume Litres	17	25
Drive unit	250 mm extra long throw , cast chassis	300 mm extra long throw, cast chassis
Lower frequency response in room at -6dB	17Hz	14Hz
Input connectors	Hi Level Neutrik Speakon Lo Level twin phonos 0dB and +12dB	Hi Level Neutrik Speakon Lo Level twin phonos 0dB and +12dB
Input impedance Ohms	Hi Level 100k Lo Level 0dB 10k Lo Level +12db 2.5k	Hi Level 100k Lo Level 0dB 10k Lo Level +12db 2.5k
Gain control range	56dB	80dB
Power output (RMS) Watts	200	400
Mode selector	Yes, see page 12	Yes, see page 12
Phasing	Positive or reversed, page 13	Positive or reversed, page 13
Amplifier type	DC coupled mosfet	DC coupled mosfet
Protection System		
1. Fully electronic with <i>SET-SAFE</i>	Yes	Yes
2. D.C. Fault	Yes	Yes
3. Output short	Yes	Yes
Mains input voltage	220-240 volts, 110-120 volts for certain markets	220-240 volts, 110-120 volts for certain markets
Fuses	2 Amp semi delay 230 volts operation 3.15 Amp semi delay 110 volts operation	5 Amp semi delay 230 volts operation 8 Amp semi delay 110 volts operation
There Are No Internal User Replaceable Parts		
Dimensions mm Inc feet and rear panel controls	Q201E – 300 x 328 x 353 Q200E – 300 x 303 x 323	392 x 420 x 430
Dimensions inches Inc feet and rear panel controls	Q201E – 11.81 x 12.91 x 13.9 Q200E – 11.81 x 11.93 x 12.72	15.43 x 16.54 x 16.93
Net weight Kg (lbs.)	Q201E – 17 (37.48) Q200E – 16.22 (35.68)	30 (66.14)
Supplied Accessories		
Mains lead	Yes	Yes
Neutrik Speakon Interconnect 10 Metres nominal	Yes	Yes
5 metre phono interconnect	Yes	Yes
Users manual	Yes	Yes
Spikes	Yes	Yes
Nylon Screws	Yes	Yes
Nylon Feet	Q201E – Yes, Q200E - No	No
Grille	Q201E – Yes, Q200E - No	Yes

In the interest of product development, REL Acoustics Limited reserve the right to vary these specifications without notice

