

To the Owner

We would like to thank you for investing in Wilson Benesch and supporting the work that we do.

Please return your completed Guarantee Registration Card within 6-weeks of purchase. Warranty conditions can be viewed towards the back of this manual.

To the Music Connoisseur

To the cognoscenti of British high performance audio, the Wilson Benesch marque is recognised as one of the world's leading loudspeaker design and manufacturing companies. You now own a product that will deliver years of pleasure, within the comfort of your own home. The purchase of a Wilson Benesch loudspeaker is merely the beginning of a long relationship. The Geometry Series products have been engineered to last a lifetime and are guaranteed for five-years from the date of purchase. The care and attention offered by the Wilson Benesch dealer and distribution network matches the quality systems that we make. Should you need further advice about cables, set-up, upgrades or any other matters relating to the system, we would politely refer you to your local dealer or national importer.

Included in the box

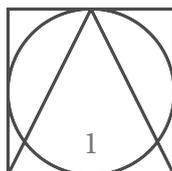
- 1 x Cardinal Manual

- 1 x Wilson Benesch Spanner (13mm / 22mm)
- 1 x 6mm Hex Key
- 1 x 3mm Hex Key

- 2 x Pure Silver Link-Leads

- 2 x Cardinal Grills
- 4 x Cardinal Grill Bolts (M4 x 30mm)
- 8 x Cardinal Baffle Screws (used when grill not installed)

- 16 x High Tensile Bolts for Extension Plates (M10 x 40mm Countersunk)
- 8 x High Tensile Bolts for Front Plate (M10 x 30mm Countersunk)
- 2 x Foot Extension Plates (Left)
- 2 x Foot Extension Plates (Right)
- 2 x Front Spike Plates
- 6 x Floor Protectors
- 2 x Front Spikes
- 4 x Rear Spikes including handwheels



Unpacking & Set-up Instruction

Important points before setting up:

During installation of your Cardinal loudspeakers, three or more people will be required as the speakers are very heavy. Never attempt to unpack or install the speakers without assistance as this could result in damage to the product or personal injury.

Please observe normal procedures for lifting and correct posture when handling the speakers. Soft fabric gloves are recommended to prevent damage to the high quality finish. Also, it is strongly recommended that all watches and jewellery be removed prior to unpacking. Patient and careful setting up is essential to obtaining the maximum performance from this system.

Where possible move the shipping containers as close to the final listening position as possible. Then observe carefully the diagram which explains in detail how to unpack your Cardinal Loudspeakers and install the feet correctly. For further information on positioning, see the loudspeaker positioning section.

Particular care should be taken not to damage the finish on the foot and the foot plates / hand-wheels when installing. Furthermore, the supplied floor protectors should be used carefully to ensure that the floor is not damaged during installation and setup.

The supplied packaging is essential for shipping the loudspeaker safely and it is expensive to replace, it is highly recommended that the packaging is retained.

Wilson Benesch products are distributed by the world's finest distributors and dealers, should you have any problems or question about the setup of your speaker please refer to your local dealer.

Wiring the Cardinal Loudspeakers

Every element of the Cardinal design has been carefully considered and optimised. The terminal binding plate and the supplied link-leads are no exception.

The terminal plate has been carefully positioned on the underside of the Cardinal to hide as much as possible the cabling running from the amplifier. This is an aesthetic concern, with so much attention to every detail of the Cardinal design it is an important consideration.

The terminal plate has been labelled H, M, L, B. Denoting as follows:

High - Semisphere Tweeter
Mid - Tactic II Upper Midrange Drive Unit
Low - Tactic II Lower Midrange Drive Unit
Bass - Isobaric Drive System

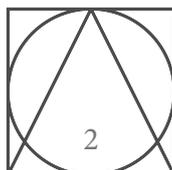
Furthermore a clear '+' and '-' bank of terminals can be determined from the terminal plate. This corresponds to the amplifiers polarity.

Pure Silver Wire Link-Wires

Wilson Benesch believe that no compromise should be accepted. Supplied with the Cardinal, pre-installed on the terminal block is a pure silver link wire.

The link wires offered by Wilson Benesch are simple, naked lengths of 99.99% pure silver wire, 2mm in diameter, offering extremely low resistance, a low dielectric constant and the lowest possible number of changes in conductor material in the signal path, for lower distortion and coloration.

The link wires can be easily modified for bi-wire and tri-wire configurations if required by using some wire cutters to trim the lengths and divide the wires.

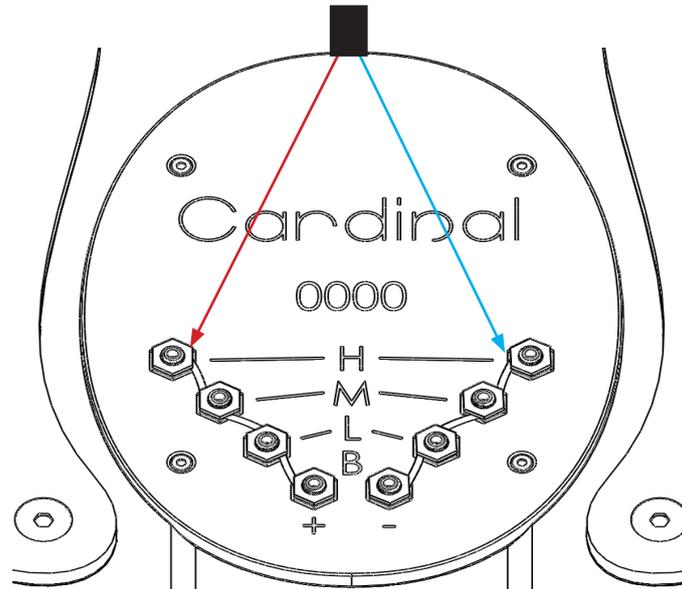


Wiring Configurations

Loudspeaker wiring should be carefully considered before any wiring is installed. Wilson Benesch highly recommend, where possible, bi-wiring and bi-amping the Cardinal. By dividing the load of the Isobaric Drive System to one channel of one amp and then driving the Semisphere Tweeter and Troika System with the other channel of one amplifier, the listener can enjoy more control and improved dynamics from the Cardinal Loudspeaker. Further benefits can be gained from Tri-Wire and Quad-Wiring the Cardinal where possible.

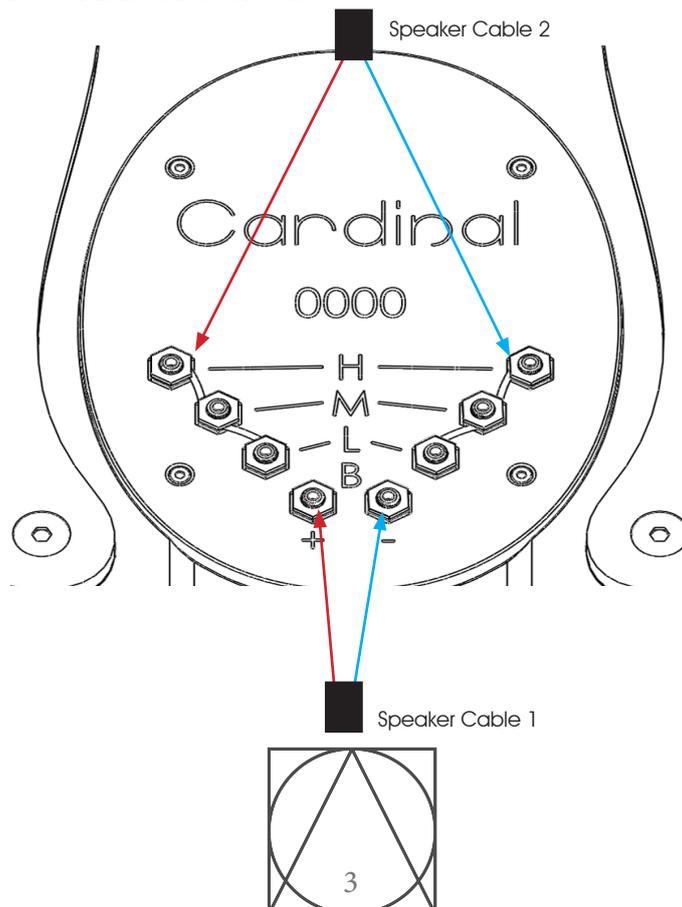
Single-Wire Configuration

In such instance the supplied link-wire shipped pre-installed with the Cardinal should look like this:



Bi-Wire / Bi-Amp Configuration

In such instance the supplied silver link-wire shipped with the Cardinal would be cut and trimmed in the middle and the configuration would look like this:



The Subject of Room Acoustics

Acoustics is a complex subject and this text should be treated for what it is, a simple but informative guide. For a more in depth understanding you would need to refer to a whole range of texts on the subject. The most important outcome of this should be a greater appreciation of the role played by the room and surroundings on the overall sound of the audio system. The air contained within the room is the link between the output of the loudspeaker and your ear. How air behaves is dependant upon the attributes or character of the room. It follows that a better understanding of basic acoustics and what facets cause the most influence in the room will assist in making decisions about the way in which the room and subsequently the system can be improved.

Room types fall between two extremes. A room can be 'dead' on the one hand (full of highly energy absorbent materials and complex diffusing structures) or very 'lively' on the other (few reflective surfaces and a high proportion of very reflective, hard, non absorbent surfaces). As so often is the case a balance of materials is commonly preferable to one extreme or the other. The correct balance is the goal for the end user.

Room attributes that can be easily changed

The contents of a room will impact upon its overall acoustic character. As you would expect hard surfaces like glass and concrete tend to reflect a broad band of acoustic energy. Complimentary materials that are soft and thick in section such as heavy natural fibre curtains will tend to absorb a broad band of frequencies.

What are standing waves?

When sound waves reflect between two parallel surfaces, the distance apart being equal to half the wavelength or less, dependant upon wave size, resonance modes referred to as 'standing waves' are created.

In loudspeakers with parallel walls these waves will cause distortions. With the Cardinal, Wilson Benesch have engineered a geometrically optimised A.C.T. Monocoque to counter this problem within the loudspeaker. However, the standing waves in your room will distort the frequency response of your system sympathetically boosting certain frequencies. If a certain standing wave frequency is acoustically isolated from its modal neighbours its effect is more likely to be audible and problematic. This can compromise the accuracy of any loudspeaker.

Middle & High Frequency Room Characteristics

The middle and high frequencies are affected more by room contents rather than room shape. The surfaces and how they reflect, absorb or diffuse the acoustic energy will tend to describe the 'sound' of a room. Like all energy, acoustic energy cannot be destroyed; it can only be converted into something else or reflected. The shape of the surface will determine how it is reflected and the material will determine whether it is absorbed.

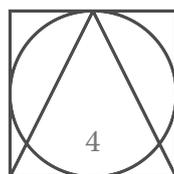
All rooms have a particular sound, and to appreciate what influences are present in your particular room you should be aware of how the objects in your room will respond to sound.

Sound waves behave in the same way as light waves or 'rays' and so imagine the driver to be a floodlight.

Reflection: acoustic energy is not converted but reflected in an orderly, predictable fashion.

Diffusion: acoustic energy is dispersed in a random and/or disordered fashion.

Absorption: acoustic energy is converted into kinetic energy or heat. All or a majority of the sound energy is 'soaked up' or disposed of by the object surface or room boundary.



Two-Channel Loudspeaker Positioning

There are no objective criteria that can be used to state precisely where loudspeakers should be positioned. Should any individual or company suggest that there are, they should be treated with a great deal of caution. In the global scenario, our loudspeakers are driven by unique systems that are selected by the owner because of particular virtues. Every listening room is as individual and unique in character as the owner. Compound this complex picture with the combination of different equipment.

Consider the changeability of rooms; if the room is dressed with heavy curtains simply changing the curtains position can alter the whole balance of the system. The only rule is that there are no rules. Like producing good wine it is the goal that is the only guide. The owner is the pivot in this subtle balancing act and we encourage you to trust your own ears.

The goal of high performance audio systems is accurate reproduction. The information, be it in groove or pit format, should be transcribed, amplified and converted back into sound energy without the additional views of the audio equipment designer being combined with that translation process.

In order to make the task of positioning the loudspeakers less complex we would like to make the following suggestions. The most valuable commodity in this process is time. Be prepared to make small changes over longer periods of time. Select four musical passages that can fulfill the following tests. They should all be stereo recordings.

- Select one with a distinctive and easily heard human voice. Spoken voice is ideal.
- Select one passage with a full orchestra like The Pines of Rome.
- Select one that you have an emotional connection to.
- Select one that has a strong rhythm, as is the case with dance music for example.

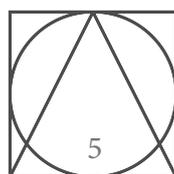
You should appraise the performance of the loudspeakers according to your needs based upon the tests above.

Bi Amping

The power that is delivered to your drive units will have a direct effect on the sound of your loudspeakers. You should select the best that you can afford. Separating the systems will deliver benefits that can easily be detected. We would recommend using the same model of amplifier on different drivers.

Bi Wiring

Improvements can be heard through separating the energy from each filter in the crossover. Cables vary in construction but a good quality cable should be low in impedance, inductance and capacitance. Do not use cables that act as additional crossover components. Experimentation is crucial in this situation and a cable that works well in one situation with a given amplifier may not always perform as well when one of these variables is changed.



Terminals

Wilson Benesch recommends the use of 8mm ring or spade connector cable terminations. A spanner is provided to tighten up the rhodium plated nuts. Please be careful to not over tighten the terminals as this could result in damage. The terminals will also accept banana plugs.

Spikes

The Cardinal spikes are built complete with high quality hand-wheels in the dedicated hardware case. Coupled with the floor protector and the captive kinematic ball bearing contained within, you have an elegant and precise method of fine tuning your Cardinal loudspeakers, moving the huge mass of the Cardinal with the turn of a wheel.

Great care should be taken when handling the Cardinal. By a series of careful and methodical tests you can adjust the speakers toe and rake angle. Should you wish to adjust either of these factors you should arrange for an assistant to work with you. The position of the Semisphere Tweeter has been designed to function best for listeners seated in conventional relaxed seating positions. If required, for other situations such as listeners on high / low seating positions, or standing, the speakers can be tilted back to alter the projection of the Semisphere Tweeters imaging.

Magnet Precautions

The motors used in all Wilson Benesch speakers are built from the most powerful magnetic material in the world, Nd.Fe.B. Do not bring any metallic objects or sensitive electronic, electromagnetic or mechanical systems into close proximity of these devices. This includes pace makers or other critical devices. The company cannot accept responsibility for any damage or injury caused to any such systems as a result of accidental exposure.

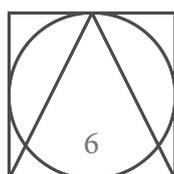
Running In Time (70 hours)

Like anything of good quality a period of running in tends to see improvements in performance. The speaker cabinet requires time to settle in to its surroundings. Climatic and humidity variations will require time for the loudspeaker to adjust to and until the loudspeaker has adjusted the performance will be below its best. The drivers require time to bed in physically and relax materially. Wilson Benesch advise at least seventy-hours of running in.

Surface Finish

All Wilson Benesch loudspeakers have been built using aerospace grade materials and finishes. The surface finishes applied to all Wilson Benesch loudspeakers require no further attention other than the occasional dusting with a fine material. Sunlight can be very damaging to material finishes and products should always be protected from direct sunlight.

Treat the driver cones with respect and they will last a decade with relative ease. With a little care your Cardinal Loudspeakers will look as good in ten years as they do today.



Other Adjustments

Under no circumstance should the user make any adjustment to the system's parts. Any adjustments not described as required by the setting up procedure will void all warranty.

Should there be any problems with the system performance you should refer the problem to your dealer immediately for advice and/or assistance. If in the unlikely event that the problem cannot be dealt with by your dealer or distributor, do not under any circumstances return the goods to Wilson Benesch without prior written agreement from Wilson Benesch.

World Wide Warranty

Wilson Benesch offers a 5-year conditional warranty to the end user. It is done in collaboration with our distributors.

The conditions of this warranty are:

- That Wilson Benesch receives the necessary registration details from the end user.
- That these details are received within six weeks of purchase.
- The warranty is only valid for the first owner and is not transferable.
- That it is limited to the repair of the equipment only.
- That any claim is accompanied by the necessary proof of purchase.
- That cover does not extend to damage caused by faulty or unsuitable ancillary equipment.
- That the serial number has not been altered, deleted, removed or made illegible.
- That the product has not been abused or modified in any way.
- That it was purchased originally from a Wilson Benesch authorised dealer.

If the equipment is being used in the country of purchase, you should contact the Wilson Benesch authorised dealer from whom the equipment was purchased.

If the equipment is being used outside the country of purchase, you should contact the Wilson Benesch national distributor in the country of residence who will advise where the equipment can be serviced. You can call Wilson Benesch in the UK or visit our website to get the contact details of your local distributor. To validate your warranty, you will need the original sales receipt or other proof of ownership and date of purchase.

