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CASTLE

Avon Series

LOUDSPEAKER RANGE

IAG

International Audio Group

IAG House 13/14 Glebe Road Huntingdon Cambridgeshire PE29 7DL UK

INSTRUCTION MANUAL

User Cautions

CAUTION!
RISK OF ELECTRIC SHOCK
DO NOT OPEN

TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER (OR BACK)
NO USER-REMOVEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

ADVERTISSEMENT: RISQUE DE CHOC ELECTRIQUE- NE PAS OUVRIR

This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.

IMPORTANT SAFETY INFORMATION

Read these instructions.
Keep these instructions.
Heed all warnings.
Follow all instructions.
Do not use this apparatus near water.
Clean only with dry cloth.
Do not block any ventilation openings.
Install in accordance with the manufacturer's instructions.
Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
Use only attachments/accessories specified by the manufacturer.

Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Unplug this apparatus during lightning storms or when unused for long periods of time.
Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
Warning: To reduce the risk of fire or electrical shock, do not expose this product to rain or moisture. The product must not be exposed to dripping and splashing and no object filled with liquids - such as a vase of flowers-shouldbeplacedontheproduct.
No naked flame sources such as candles should be placed on the product.
Caution: Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this device.

Warning Castle Subwoofer: The mains power switch for this appliance is located on the rear panel. To permit free access to this switch, the apparatus must be located in an open area without any obstructions.

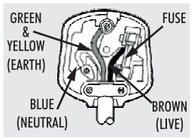
NOTE: Castle Subwoofer:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

IMPORTANT NOTICE TO UK USERS

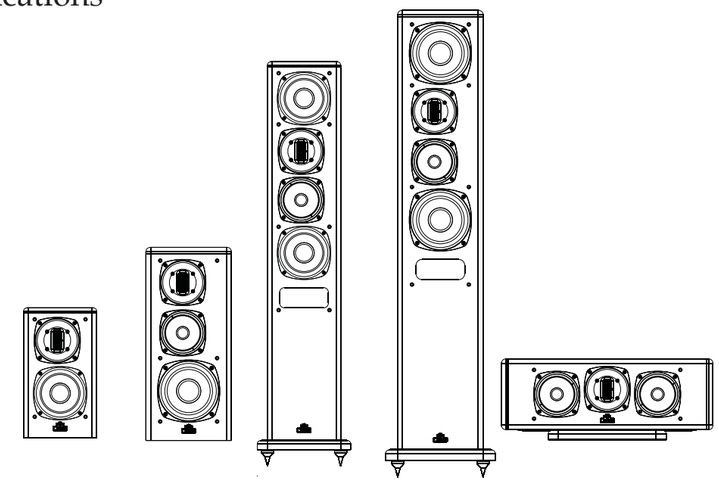
The power cord on your subwoofer may be supplied with a plug incorporating a fuse, the value of which is indicated on the pin face of the plug. Should the fuse need to be replaced, an ASTA or BSI approved BS1362 fuse must be used of the same rating. If the plug is cut off it must NOT be re-used. Dispose of any such plug safely. There is a danger of electric shock if a cut-off plug is inserted into a mains socket.

Connecting a Mains Plug



The wires in the mains lead are coloured in accordance with the code:
Blue: NEUTRAL, Brown: LIVE: Green/Yellow: Earth.
As these colours may not correspond to the coloured markings identifying the terminals in your plug, proceed as follows: The BLUE wire must be connected to the terminal marked with the letter N or coloured BLUE or BLACK. The BROWN wire must be connected to the terminal marked with the letter L or coloured BROWN or RED. The GREEN/YELLOW wire must be connected to the terminal marked with the letter E or coloured GREEN or marked with the symbol ⏚

Specifications



Avon Series

Parameter	Avon 1	Avon 2	Avon 4	Avon 5	Avon C
Description	2-way	3-way	3-way	3-way	3-way
Format	Stand Mount	Stand Mount	Floorstanding	Floorstanding	Centre Speaker
Enclosure type	SDEL - Single Drive Extended Line	SDEL - Single Drive Extended Line	TDTL - Twin Drive Transmission Line	TDTL - Twin Drive Transmission Line	TDEL - Twin Drive Extended Line
Bass Driver	130mm	150mm	130mm	2 x 130mm	2 x 150mm
Midrange driver	–	115mm	115mm	115mm	2 x 115mm
Tweeter	12 x 45 mm True Ribbon	12 x 45 mm True Ribbon	12 x 45 mm True Ribbon	12 x 45 mm True Ribbon	12 x 45 mm True Ribbon
Amplifier power (rec.)	25 - 100W	25 - 100W	25 - 100W	25 - 100W	25 - 100W
Impedance (Nominal)	8 Ohms Compatible	8 Ohms Compatible	8 Ohms Compatible	8 Ohms Compatible	8 Ohms Compatible
Sensitivity (1W@1M)	87 dB	88 dB	89 dB	89 dB	90 dB
Nominal Frequency Range	60Hz - 20kHz	50Hz - 20kHz	45Hz - 20kHz	35Hz - 20kHz	65Hz - 20kHz
Bass extension(-6dB)	55Hz	45Hz	40Hz	30Hz	60Hz
Crossover Frequency	2.5 kHz	320Hz&3.2 kHz	320Hz&3.6kHz	300Hz&3.6kHz	300Hz&3.8kHz
Dimensions (HxWxD) (mm)	320 x 180 x 260	475 x 210 x 310	930 x 180 x 310	1080 x 210 x 365	175 x 520 x 320
Height on plinth and spikes	–	–	955	1110	200
Net weight	5.8 kg (12.8 lbs)	10.5 kg (23 lbs)	17.6 kg (38.7 lbs)	24 kg (52.8 lbs)	14 kg (30.8 lbs)
Carton size (mm)	520 x 350 x 440	590 x 410 x 605	1130 x 420 x 310	1290 x 480 x 340	620 x 400 x 310
Gross weight	13.2 kg (29 lbs)	23 kg (50.6 lbs)	19.2 kg (42.2 lbs)	26.2 kg (57.6 lbs)	15.2 kg (33.4lbs)
Finishes	Specially selected Deep Figured Veneers sealed with "natural feeling" semi matt clear lacquer				

Produced after 13th August 2005.
Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist.
Check with your Local Authority or retailer for recycling advice.

Avon Series

Final Thoughts

Looking After Your Loudspeaker

- Your Castle Loudspeakers use a specially hardwearing sealed finish. They should not be waxed or treated with spray polishes which will smear and dim their lustrous finish. Occasionally polish them with a dry or barely moist cloth to remove dust and finger marks, etc.
- Occasionally, remove the loudspeaker grilles and brush them gently with a soft brush before replacing them carefully.
- Never stand objects on your loudspeakers. In particular do not stand flowers etc. on them - they are not jardinieres!
- Avoid getting any liquid behind the grille. If you accidentally spill liquid on your loudspeakers, take them to your dealer for attention before using them again.
- Do not open the speakers; there are no user serviceable parts inside. Never touch the drive units either with an object or your hands.

Quality Assurance

Your Castle loudspeakers have been constructed to the highest standards. From the top grade furniture construction and finish to the carefully designed and selected acoustic components, the Castle range is a testament to fine design, fine engineering and fine craftsmanship. Our speakers are built to provide a lifetime of pleasure to the eye, the ears and through the music they play, the soul. We hope you will derive many years of good service from our products.

Servicing

Servicing of Castle products should only be carried out by authorised service agents. If service is required the equipment should be returned, securely packaged, preferably using original packaging, to your dealer.

In the UK equipment may be returned to the IAG Service Centre. Always telephone before returning any equipment. A note should be enclosed giving your name, address, telephone number, and a brief description of the reason for return.

If you require service outside the Warranty period, do not hesitate to contact your dealer.

Service Addresses

For technical support, servicing, product queries or information please contact either your local retailer or the main offices below.

UK

IAG Service Dept.
IAG House
13/14 Glebe Road
Huntingdon Cambridgeshire
PE29 7DL
England
Tel:+44 (0)01480 452561
Fax: +44 (0)01480 413403

Asia

IAG Sales and Service Centre
JiuweiVillage, XixiangTown,
Shenzhen,
China 518102
Tel: +86-755-27484491
Fax: +86-755-29651484

Introduction – A Tradition Renewed

The Avon series is the new TL System range from Castle. Retaining the hand built, craftsman finished real wood veneers for which Castle is famous, Avon loudspeakersfeature the latest technology in Transmission Line systems.

For Avon series Castle engineers redefined the Transmission Line concept, solving age old problems using advanced computer modelling to yield floorstanding loudspeakers that provide the highest possible bass articulation and extension.

Building on the Castle innovative quarter wave principle, the Avon floorstanding loudspeakers use a new TDTL (Twin Drive Transmission Line) driver and cabinet combination. Here twin, spaced bass units drive the Transmission Line in optimal fashion, improving efficiency and bandwidth while delivering the extended, powerful bass for which the Transmission Line is famous.

In the stand mount Avon loudspeakers Castle engineers developed the SDEL (Single Drive Extended Line) system, utilising Transmission Line principles to provide powerful bass extension within a compact cabinet size.
Of course these innovations in bass performance need to be matched by equally pure and precise midrange and treble presentation. Accordingly Avon series speakers use a precision midrange unit and ribbon tweeter arrangement that provide the utmost clarity and musical detail to perfectly match the advanced bass quality.

We are sure you will enjoy all your music replayed and revealed afresh from the CastleAvon series.

Contents

Foreword

Before connecting and using your loudspeakers, please bear the following points in mind:

- Switch off the amplifier and all sources before making connections to your sound system. When you switch on the system or change sources, set the volume control to minimum and turn up the level gradually.
- The position of your Volume Control is NOT a reliable guide as to the maximum capabilities of your sound system. Playing the system with extreme settings of volume and tone controls may damage the amplifier and loudspeakers.
- Do not connect loudspeaker terminals to the mains supply.
- Ensure that your loudspeakers are correctly wired and are in phase.
- Do not subject your loudspeakers to excessive cold, heat or sunlight.
- If you are shelf mounting your loudspeakers, make sure they are not placed on the same shelf as your source components.
- Do not place heavy objects on top of loudspeaker cabinets. If you play the loudspeakers with the grilles removed be careful to protect the drive units from children and pets.
- Do not use makeshift stands. Always fit a manufacturer's approved stand using the instructions and the fixings provided. Your dealer will advise you.
- Do not attempt to dismantle the loudspeaker. There are no user serviceable parts inside and you will invalidate the warranty.
- Some Front and all Centre loudspeakers are magnetically screened. You should site front loudspeakers at least 0.5 m away from TV sets and magnetic storage media.
- When connecting your loudspeakers, do not run cable across areas of open floor where they may be a source of danger. Run them safely, around room boundaries if necessary.

Fine Tuning Procedures

Setting up of the subwoofer should be performed with all tone controls and filters on your amplifier or processor set 'flat'.

Listening rooms are not ideal. Because of room geometry and construction there will be areas with severe peaks at some frequencies and severe troughs at others. If you site loudspeakers in such areas the response will be highly non-linear. It is easier to treat high frequency irregularities by the use of drapes, soft furnishings etc., but very hard to do the same at bass frequencies due to the very long wavelengths.

To help locate standing waves in your listening room, one idea is to sit in the listening seat and recruit a friend with a deep voice to speak as he moves around the area where you propose to site your subwoofer - you will soon find out where *not* to site it! Where the voice sounds most natural is a good place to start.

Although the subwoofer's bass output is enhanced by walls or corners, so often is coloration. The floor will influence the sound. The surface under the subwoofer should be stable and unobstructed. If the carpet is very thick, consider placing the subwoofer on a solid surface such as a marble slab. If you place the subwoofer where it amplifies the irregularities of the room or the main speakers the result will be bloated, coloured bass. If acoustic guitar and male voice sounds coloured when the subwoofer is operating at normal level and less coloured if the subwoofer volume is reduced, you need to address the positioning first before adjusting any controls.

Loudspeaker Phasing: Make sure that all loudspeaker channels are connected in phase. If there is a doubt about the way the loudspeakers are connected, check their phasing by playing a mono source - the sound should appear from a point midway between the front loudspeakers. If this position is indefinite, reverse the connections to one speaker. Correctly connected loudspeakers give a definite centre sound source with fuller bodied tenor and bass registers.

Setting the Phase of the Subwoofer: Phase at very low frequencies is not straightforward to detect. Initially we suggest you temporarily set the low pass filter to 'off' and the phase to 0º and play some bass heavy music in Stereo through the main speakers and the subwoofer. From the listening position, switch the phase between 0º and 180º. The setting which appears to give the greater bass output is correct. Now follow the instructions below for setting the low pass filter.

Crossover Control: If you are using a digital AV processor the initial subwoofer setting should be 85Hz as the processor will have its own bass management system.

Setting Loudspeaker Sizes: Most digital AV Processors ask you to specify the size of speakers in the various channels. These are usually 'Large' or 'Small'. This sets the bass management for the system. Castle floor standing loudspeakers can be set to 'Large' Smaller loudspeakers (including stand mounted units) should be set to 'Small' for the Front channels. Choose 'Small' for the surround channels and also for the Centre channel, so that any bass from these channels will be directed to the subwoofer. Set the 'Subwoofer' option on the processor to 'On' or 'Yes'.

After experimenting with various sources you may need to adjust the Subwoofer Crossover settings. Try to ensure the subwoofer blends into the sound stage - the more invisible the subwoofer component of the sound field is, the better.

Setting levels:

Once the loudspeaker settings have been finalised, put the AV amplifier into its "Test" mode (see instructions supplied with your processor.) Adjust the levels until all channels are reproduced at equal loudness.

When adjusting the subwoofer output level avoid setting too high a level or you will swamp the sound with bass which be tiring to listen to and may limit the subwoofer's ability to respond to large bass transients. Set a sensible level going *into* the subwoofer from the processor.

LFE: This channel was originally an additional bass channel with its own dedicated subwoofer. In practice however, if any speakers are set to 'Small', the LFE channel is combined with the bass from those channels and fed into the subwoofer. When you set the LFE level from your AV processor, use care as the LFE channel contains powerful low frequencies which, although normal in a cinema, may overload a domestic subwoofer. If, during a programme, you hear popping or thumping noises from the subwoofer, turn the AV Processor volume level down and back off the LFE level. If this does not cure the problem, lower the subwoofer volume level.

Delay and LFE Settings

The purpose of delay is to enable surround and dialogue information to arrive at the listener's ears at the same time as the Front channels, even when the listening seat is in a non-ideal position.
Rear Delay: If the listening position is equidistant from the Front and Rear speakers, a low delay setting should be set. The closer the listener is to the Rear speakers the higher should be the delay setting used,
Centre Delay: If the Centre speaker is level with (or slightly behind) the Front speakers, set the delay to zero. If the Centre speaker is forward of the Front speakers, increase the delay.

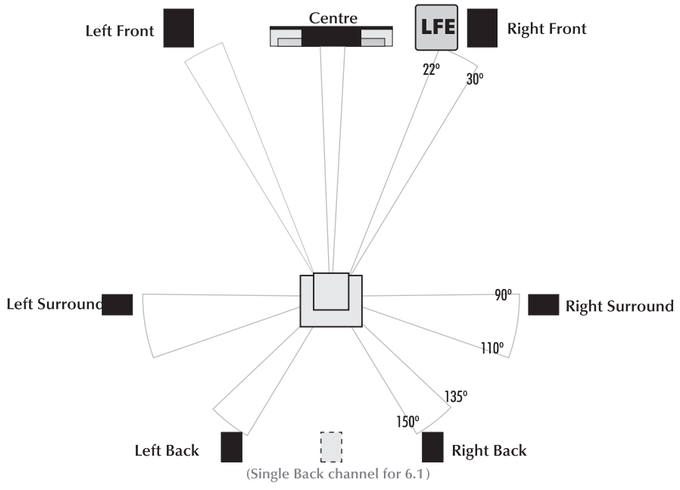
LFE: In domestic systems the LFE channel typically feeds into the subwoofer. Where no subwoofer is used, the LFE signal is combined with Front Channel information. When you set the LFE level at your AV processor, use care as the powerful low frequencies can overload domestic loudspeakers.

If you hear popping or thumping noises coming from the front loudspeakers or subwoofer, immediately turn the AV Processor's volume level down and then back off the LFE level. This should cure the problem. If it does not, back off the volume level at the subwoofer (if you are using one) until the problem disappears.
Please read the relevant sections of your AV amplifier manual and familiarise yourself with the various issues. If you are unsure, consult your dealer for help.

Expanding the System

Dolby Labs, DTS and THX offer 6.1 and 7.1 formats. Although the precise configuration of these systems will depend on the capabilities of your processor and you should be guided by those instructions, we would make some observations.
For most 6.1 and 7.1 formats, and especially Dolby ES, the listening seat should not be too close to the rear wall. Optimising the time delay so that information from all speakers arrives at the listening seat coherently is critical if the benefits of these systems are to be fully realised.

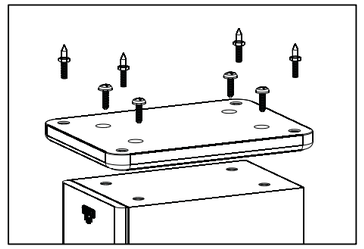
Dolby Labs Recommended 7.1 Placement



Unpacking Your Loudspeakers

- Castle loudspeakers come in many shapes and sizes. Now you have opened the carton, please read this manual.
- If you are unpacking the larger loudspeakers or the Classic Subwoofer, please remember that these units are heavy. We suggest that you have someone to assist you.
- Lift the loudspeaker carefully out of the packing. Do NOT try and lift the loudspeaker using the cloth bag.
- Unpack any accessories carefully. The larger loudspeakers will need to be assembled on their plinths and spike kits.
- If there is any sign of damage or if the contents are incomplete, report this to your dealer as soon as possible.
- Retain the packing for future safe transport of the product. If you dispose of the packing, do so with respect to any recycling provisions in your area.
- Stand mounting and AV loudspeakers are ready to be connected after unpacking. The larger loudspeakers will need to be assembled on their plinths and spike kits.

Attaching the Plinth and Spikes to Floorstanding Models



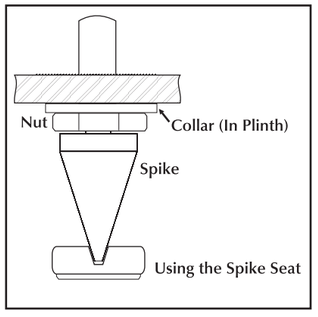
- Make you have plenty of unobstructed working space.
- Place a soft cloth on the floor to protect the loudspeaker.
- Invert the loudspeaker onto the cloth.
- Thread a locknut onto each spike and loosely run it up the thread

Using the spacers:
Spacers are provided with these floor standing loudspeakers. These must be attached as shown below to tune the lower frequencies correctly.

Attaching the Plinth:

- Place the plinth on the loudspeaker. Place a washer over each of the four round head screws. Insert the screws into the threaded holes on the loudspeaker and tighten securely.
- Thread the spikes onto the spike inserts. Tighten them finger tight.
- Invert the loudspeaker. Take care not to damage the floor with the spikes.

Levelling the Loudspeakers



- **When the speaker is upright:** You will probably find that the speaker will wobble with one spike not contacting the floor. Adjust this spike until all four spikes are on the floor. With the aid of a spirit level move each spike in and out until the loudspeaker is level and sitting squarely on all four spikes with no rocking.
- Now tighten each locknut securely against the collar in the plinth to secure the spike
- A spike seat is provided for use on wood or stone floors etc. and should be placed as shown.

*** On most models four self leveling soft rubber feet are included as an alternative to spikes.**

Cables and Connectors

Choosing Loudspeaker Cable

Specialist audio cable usually offers better performance than general purpose 'bell' or 'zip' wire.

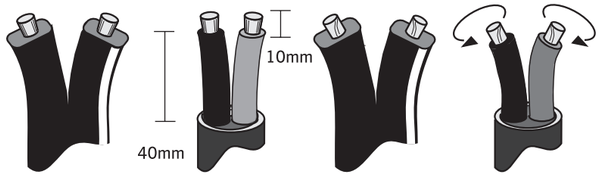
Choose a cable of suitable diameter – cable that is too thin will limit the dynamics of the sound and may impair the bass response. Audio cable is polarised, with two cores of different colours, or often a raised rib or coloured tracer in the case of twin cable.

Before you purchase your cable, we suggest that you give careful thought to the positioning of your loudspeakers. This is especially the case if you are bi- or tri-wiring your loudspeakers.

Cable lengths to loudspeaker pairs should be the same for left and right channels in order to equalise the signal transmission. Allow some slack in your speaker cables so you can alter their position to best advantage, but do not have your cables over-long.

Preparing Loudspeaker Cable

Split the twin cores to a depth of about 40mm. Carefully strip the insulation from each end, leaving about 10mm of bare wire. If the cable is stranded, lightly twist to gather any loose strands.



Connecting Screw Terminals

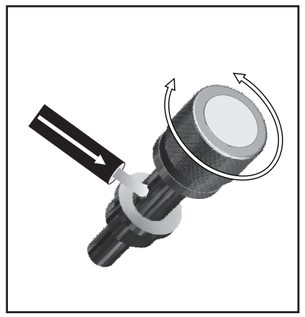
All the Castle loudspeakers use screw terminals.

Safe Connection of Terminals

Unscrew the terminal. Insert the bare end of the cable into the hole in the base of the terminal. Tighten securely.

When connecting terminals make sure you leave no strands of bare wire that can short across to adjacent terminals.

As an alternative to bare wire you can use specialist spade connectors. Your Castle dealer will be pleased to advise you.



Setting Up a Home Theatre System

Some of this chapter may appear to repeat the content of the Subwoofer pages - the context however is different.

Placement

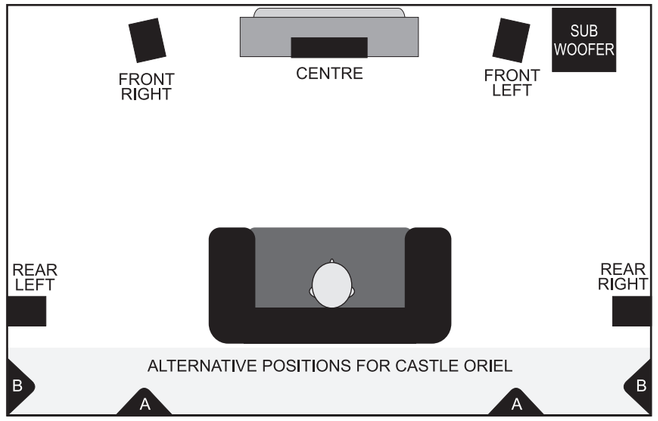
Front And Effects Channels

The front loudspeakers are placed on either side of the television screen, 2 to 3 metres apart. The speakers should be angled slightly so they are aimed towards the listeners.

We recommend placing the rear effects speakers in a high position, behind the listener's head. If the rear or side walls are a long way from the listening seat, consider stand mounting the loudspeakers. If the centre loudspeaker is very high or low, angle it towards the listener's ear level. The front faces of the centre and surround loudspeakers should also be in line as far as possible.

Subwoofer

As the ear is unable to detect the direction from which deep bass originates, this allows you freedom to position the unit. Varying the distance from the wall alters the bass. Placing the subwoofer across a corner boosts the bass but may impair clarity. The performance of Home Theatre systems can often be enhanced by using a pair of subwoofers.



Setting Loudspeaker Sizes

Many digital AV Processors ask you to specify the size of speakers in all channels - usually 'Large' or 'Small'.
The Floor standing Castle loudspeakers may be safely set to 'Large'. The other loudspeakers should be set to 'Small'

If you are not using a subwoofer: Set the Front Speakers to 'Large'. Set the 'Subwoofer' option on the processor to 'Off' or 'No'. The Front channels will now receive all the system bass.

If you are using a subwoofer: When set to 'Small' all the system bass will go into the subwoofer. If you choose 'Large' the Front channel bass will be reproduced from the Front speakers.

Once the loudspeaker settings have been finalised, put the AV amplifier into its "Test" mode (see instructions supplied with your processor). Adjust the level of each channel until all channels are reproduced at equal loudness.

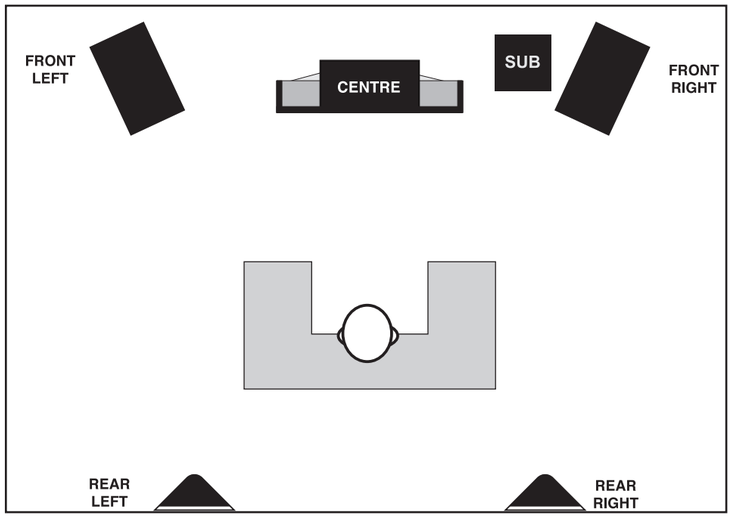
You may need to adjust the subwoofer output level. Avoid setting too high a level or you will swamp the sound with bass and may limit the subwoofer's ability to respond to large bass transients. You should also set a sensible level going into the subwoofer from the AV processor.

Positioning Castle Avon AV Loudspeakers

Front Loudspeakers: The front loudspeakers are placed on either side of the TV monitor, 2 to 3 metres apart. The speakers should be angled slightly so they are aimed towards the listeners.

Rear Surround channels: The reproduced sound should be as room filling as possible. We recommend placing the speakers in a high position, behind the listeners head. If the rear wall is more than 1 metre behind the listening seat, an alternative position is on the side walls. If the walls are a long way from the listening seat, consider stand mounting the loudspeakers.

Centre Channel: Most of the dialogue comes from the centre loudspeaker. Speech should appear to originate from the actors mouths. Operating height is important. Ideally the front and centre channel speakers should be at the same height. The front of the cabinet should be level with the TV screen.



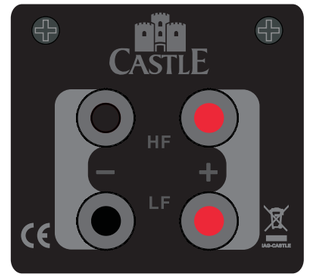
Crossover Networks

The Castle Avon Series use bi-wired terminal panels.

Biwireable Crossovers

A bi-wiring panel has four terminal binding posts. The upper terminals connect to the treble units, the lower pair to the bass unit.

As supplied the treble and bass terminal pairs are connected via removeable straps. This arrangement facilitates standard single wiring, and advanced bi-wiring which offers significant performance advantages. Follow the drawings carefully to see the correct orientation of the loudspeaker terminals.

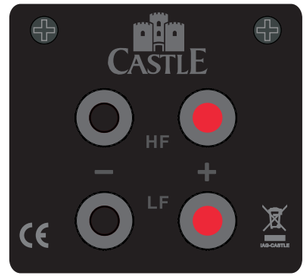


As supplied

Why Bi-Wire?

Bi-wiring involves the use of two separate cables between the amplifier and the loudspeakers. One pair connects to the treble unit the other to the bass driver.

Using separate cables for treble and bass units in a Bi-Wiring configuration reduces intermodulation effects and improves headroom and clarity. To bi-wire, you will need to install two lengths of twin core cable between the amplifier and each loudspeaker.



In bi-wiring mode

Bi-amplifying

The bi-wiring principle can be further extended by bi-amplifying (bi-amping). To bi-amp you will need two amplifiers per loudspeaker. One amplifier is connected to the treble terminals and the other to the bass terminals of the crossover panel. Bi-amping offers the greatest clarity. Because each amplifier is working over a narrow range, intermodulation distortion is virtually eliminated and acoustic performance optimised.

The amplifiers in the treble and bass sections of a bi-amped loudspeaker need not be identical but they must exhibit the same phase characteristics. If you wish to bi-amp your loudspeakers we suggest you consult your Castle dealer if you are in any doubt.

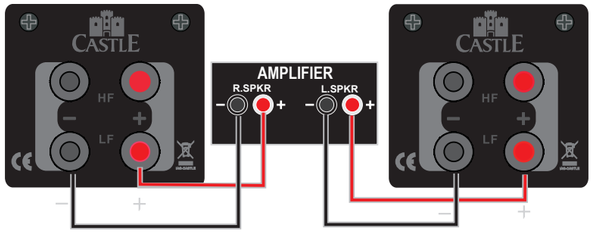
Connecting Your Loudspeakers

Standard Loudspeaker Wiring

Choose a suitable length of twin core speaker cable for each channel, and prepare the ends. Unscrew each terminal a few turns.

Connect the red, positive (+) terminal of the Left loudspeaker to the corresponding red, positive (+) amplifier terminal. Connect the black, negative (-) terminals similarly. Tighten the terminals securely. Repeat this procedure for the Right Channel.

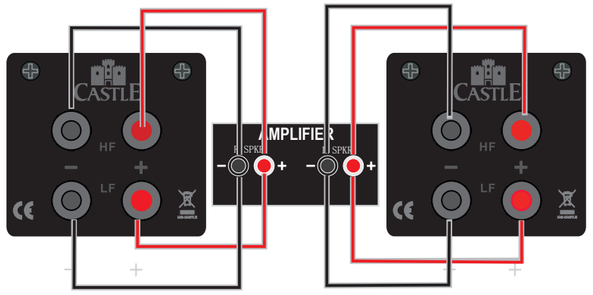
If you are standard wiring a bi-wiring panel, make sure that the binding straps are securely in place.



Right Speaker **Left Speaker**

Bi- Wiring

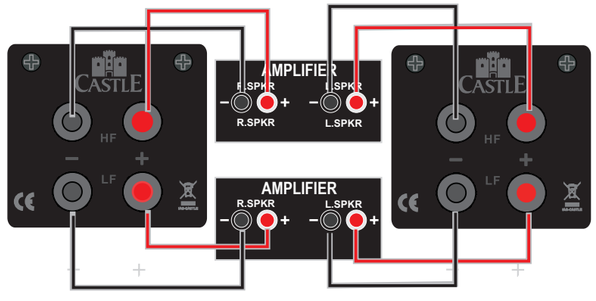
To Bi-wire, you will need to install two lengths of twin core cable between the amplifier and each loudspeaker.
Note: Some amplifiers have two pairs of output terminals to facilitate bi-wiring but this is not essential. The advantages of bi-wiring are fully retained if your amplifier has only one pair of loudspeaker terminals per channel (as in the illustration).



Right Speaker **Left Speaker**

Bi- Amping

Two amplifiers are used. One amplifier is connected to the treble terminals the other to the bass terminals.



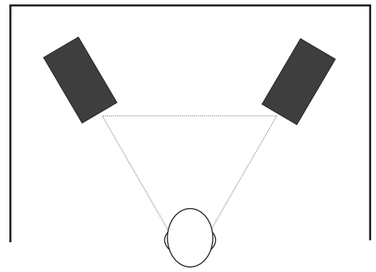
Right Speaker **Left Speaker**

Phase

It is essential that you strictly observe the colour code when connecting your loudspeakers. Incorrectly connected (out of phase) loudspeakers suffer from poor bass response and fuzzy imaging. Phase anomalies in high fidelity systems can be extremely annoying and, especially when the speakers are bi-wired or bi-amped, difficult to pin down. A correctly connected Castle loudspeaker system will give you deep sonorous bass with pinpoint imaging and clarity.

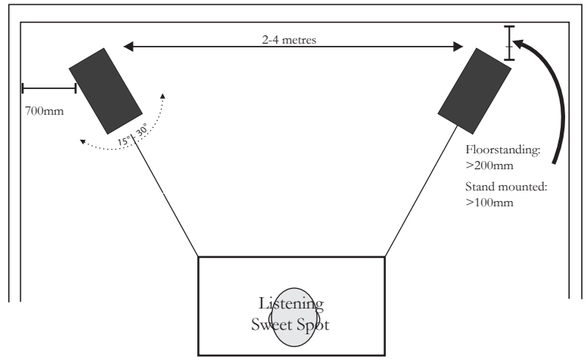
Positioning Stereo Loudspeakers

The distance between the speakers should be the same as between you and the speakers.



If the loudspeakers are placed too close to the walls, the bass will increase but may be boomy and indistinct. If the loudspeakers are placed further away from the walls, the inward angle ("toe in") may be increased by up to 30% As personal taste plays a large role, experiment with different configurations and play a wide range of programme material before finalising the position of your speakers.

The optimum listening position is in the area broadly known as the 'sweet spot'. The more extreme the angle, the narrower is the sweet spot. Castle loudspeakers are designed to cover a medium sonic perspective so there should be no need fo extreme settings.



Stand Mounting Loudspeakers

The Avon 1 and Avon 2 are designed for stand mounting. The stands should be sturdy and offer optimum support for the loudspeaker. As an alternative the speakers may be wall mounted on rigid brackets or placed on rigid shelves.

Ideally the tweeter should be at ear level to a seated listener. If the rear panels of the speakers are placed close to the walls, the amount of bass will be increased but the clarity may well suffer - you should experiment until you get the best result.