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Home Theater Speaker

JAM&LAB 8



Design: SWAN

Foreword

Thank you for choosing the hi-fi speaker products produced by SWAN.
As a Hi-End advanced audio manufacturer, SWAN has been evaluated as follows: "SWAN combines international electro-acoustic technology with local production in China, which makes its products have fashionable appearance, outstanding sound quality and reasonable price".
Swaspeaker Systems, Inc. is an American audio company with many years' experience in the production of advanced audio products. It was acquired by SWAN in 1997. Frank Hale, the former president of the company and electroacoustic designer, became the chief designer of SWAN.
The engineers of SWAN have rich experience in electroacoustic practice, and the series of speaker systems developed by them stem from their deep understanding of electroacoustic transducer. SWAN development center in SWAN has advanced acoustic analysis software and Danish B&K electroacoustic testing system; Precision material analysis, magnetic circuit analysis, laser interference spectrum analysis, digital DSP and other analytical instruments;
Different size audition rooms are used to evaluate the sound quality of audio products in various environments. Through these valuable research and development resources, SWAN engineers can constantly challenge the limits of sound reproduction system. The speakers you choose are designed by SWAN, and the speaker units are high-quality products of SWAN. SWAN hopes to bring you a beautiful musical experience, which is our good wish.
SWAN has two production bases in China, Asia, all of which have passed ISO9002 certification, equipped with a complete set of automatic production equipment imported from the United States, Denmark and Italy, and a fully computer-controlled quality management system. SWAN product testing has always maintained a high standard. SWAN became a member company of American Speaker Manufacturers Association (ALMA) in 1995.
SWAN idea is not only to transform audio signals into sound waves, because music has gone far beyond the simple concept of hearing. To be exact, music is the embodiment of the culture and lifestyle of our time. It is our requirement for SWAN speakers to reproduce the true and natural musical connotation and the musical connotation that artists try to express when playing. Therefore, it has the ability of balanced performance and clear sound quality in each range, and produces an accurate sense of space and positioning. The dynamic sound quality and technology are perfect, which is the unremitting pursuit of SWAN in the research and development field. Meeting the different needs of different users is the basic principle of SWAN. We are willing to provide products with outstanding performance and sound quality for everyone who loves music.
SWAN-Focus on sound quality.
Please read the product manual carefully before use, which will help you to use and maintain the speakers better.



Front Speaker	
Model	Jam&Lab 6
System Type	3-way 4th-order bass reflex speaker system
Driver	6" woofer x 2 5" midrange 26mm dome tweeter
Frequency Range	40Hz-40kHz
Distortion	70Hz-20kHz≤1% (2.83V/1m)
Sensitivity	88dB
Rated Impedance	4Ω
Power Range	10W-160W
Dimesion	206 x 332 x 964mm
N.W.:	22kg



Center Speaker	
Model	Jam&Lab 6C
System Type	6-way 2-order closed type speaker system
Driver	5" mid-low x 2 26mm dome tweeter
Frequency Range	66Hz-20kHz
Distortion	110Hz-20kHz≤1% (2.83V/1m)
Sensitivity	88dB
Rated Impedance	6Ω
Power Range	10W-120W
Dimesion	400 x 184 x 172mm
N.W.:	6kg



Surround Speaker	
Model	Jam&Lab 6R
System Type	2-way 2-order closed type speaker system
Driver	5" mid-low x 2 26mm dome tweeter
Frequency Range	66Hz-20kHz
Distortion	110Hz-20kHz≤1% (1V/1m)
Sensitivity	87dB
Rated Impedance	12Ω
Power Range	10W-60W
Dimesion	176 x 151 x 270mm
N.W.:	4kg

General breakdown and maintenance

1. Bad sound quality
Check whether the power amplifier works normally or is not set correctly;
Check whether the signal line between the sound source and the power amplifier is of poor quality or faulty;
Check whether the connection between the power amplifier and the speaker is in good contact, and whether the connection pieces of the two groups of terminals on the back of the speaker are in good contact;
Check whether the speaker of the speaker box can sound, and judge whether the speaker is faulty or damaged;
Check whether the connection wire of the speaker and phase of output terminal "+,-"of the power amplifier are connected correctly.

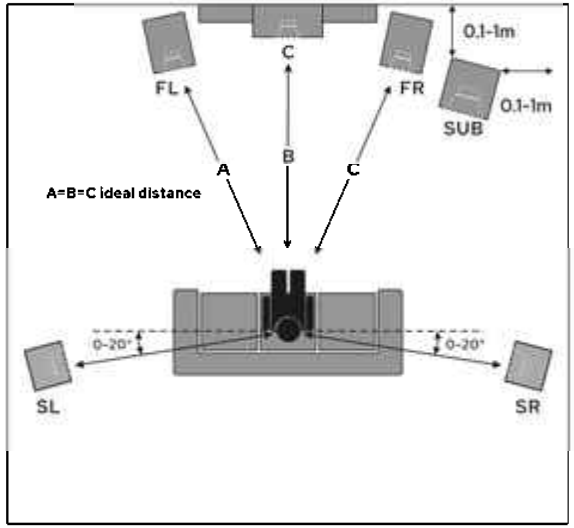
2. Completely no sound
Check whether the connecting line between the speaker and the power amplifier is open;
Check whether the power amplifier works normally or is not set correctly;
Check whether the sound source is working properly or not set correctly.
Check whether the signal wire between the sound source and the power amplifier is open.

3. No sound in a certain channel
Change the connection line of the silent channel with the connection line of the vocal channel, and judge whether it is the problem of the speaker itself or the connection line or the power amplifier.

Speaker placement

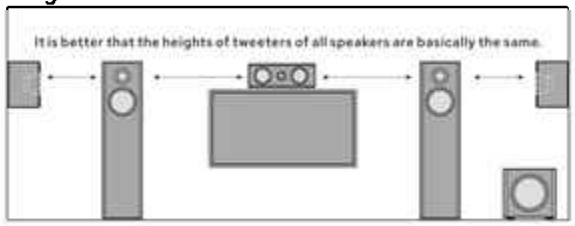
Home theater speaker system is generally a 5.1-channel speaker system, which includes left and right main speakers, center speakers, left and right surround speakers and subwoofer speakers. It is recommended that you carefully adjust the placement of the speaker system to obtain excellent playback effect. The layout of 5-channel speaker system is shown in the figure (Figure 1).

Figure 1



Placement of left and right main speakers (FL, FR):
It is the basic component of the home theater speaker system, and they are placed on the left and right sides of the screen. For small and mediumsized speakers, the distance between the two speakers and the screen is generally controlled at 0.5-1m, and the distance for large speakers needs to be increased accordingly. The main speaker should not be too far away from the screen, so as to avoid false sound performance caused by the separation of audio-visual positioning from the picture. In addition, the distance between the main speaker and the side wall also needs to be kept at 0.5-1m, so it should not be too close. In order to obtain a satisfactory sound image, the two speakers can also tilt inward at a certain angle, so that the central axis of the mid-and high-pitched speakers is aligned with the listener.

Figure 2



Placement of the center speaker (C):
The center speaker plays a very important role in expressing the dialogue between characters. The distance between the center speaker and the listener should be equal to the distance between the main speaker and the listener, so as to obtain a smooth and real sound field. In practice, you can first determine the position of the main speaker, and then adjust the distance from the main speaker to the listener. The height of the middle speaker should be basically the same as that of the tweeter in the main speaker, and it can generally be placed under or above the TV.

Speaker placement

Placement of surround speakers (SL, SR):
Surrounding speakers are used to create a real environment and sound atmosphere, and can be directly hung on the wall or placed with special brackets.
Surrounding speakers can be placed right and left facing the listener (the speakers are facing the listener's ears), or placed backward and inward, but the angle between the speakers and the listener's binaural axis should preferably be controlled at about 0-20 degrees to conform to the basic structure of human ears. The height of the surround speaker can be basically the same as the height of the main speaker, or 0.2-0. higher than the listener's ear (Figure 2).

Placement of subwoofer (SUB):
Subwoofer speaker is also an important part of home theater playback system. It is recommended to place it in the corner of the left or right front of the listening position, with a distance of about 0.1-1m from both sides of the corner. In order to obtain the ideal bass effect, the position of shell body should be determined by actual listening, and a video program with abundant bass can be played, and the subwoofer can be adjusted.

The distance from both sides of the corner and the angle of placement can make the bass feel the desired result. Pay attention to keeping subwoofer away from household appliances, such as computer monitors and televisions.

For non-magnetic speakers, try to stay away from objects such as TV sets, watches, mobile phones, IC cards, etc. which are easily interfered. Generally, when the non-magnetic speakers are 0.5-0.8m away from the TV sets, the magnetization interference has been reduced to a very small level.

Maintenance

SWAN speakers are exquisite in material selection and fine in workmanship, and can work stably for a long time in an environment that meets the requirements, generally without special care. Speakers should avoid contact with corrosive liquids and gases, and should not be placed in places with high temperature, humidity and great changes in temperature and humidity for a long time, or in direct sunlight for a long time. Do not touch the speaker diaphragm with your hands, otherwise it may damage the speaker, especially the dome tweeter. If there is any dust, it can be cleaned regularly with a clean soft cloth, and if there is any stain, it can be wiped with a detergent that does not contain a solvent for strengthening chemistry. The speaker's net has the functions of dustproof, speaker protection and beauty. The material of the net is carefully screened, which has little impact on the sound. Be careful when taking and placing the net. After removing the face net, the middle and high notes of the speaker will be slightly improved, but for the effective protection of the speaker, it is recommended that you install the net.



Avoid magnetization interference.



No direct sunlight for a long time



No placing in high temperature and humidityfor a long time, and the temperature and humidity change greatly.



No touching speaker diaphragm with yourhands.



Avoid contact with corrosive liquids and gases.

Listening environment

In order to obtain ideal listening effect, in addition to ensuring the quality of equipment, it is also necessary to properly handle the listening environment, reduce unnecessary reflections and make the reverberation time as appropriate as possible. The position of the speaker in the room directly affects the sound effect, the transparency of the sound, and even whether the sound field is truly reproduced. The size, proportional structure and interior furnishings of the room also affect the listening effect. Pay attention to the fact that the length, width and height of the room can't be an integer multiple (such as square room, 2 times, 4 times, etc.), otherwise standing waves (harmful harmonics) Vibration), making the sound turbid and unclear. A large area of smooth walls and glass will cause strong reflection of sound waves, which will blur the sound image and destroy the reproduction and positioning of sound field.
There are several simple ways to deal with the listening environment:
1. Carpet all or part of the ground in the listening area of the room to eliminate the reflection of sound waves smoothly.
2. Sticking or hanging sound-absorbing materials on smooth walls with strong sound reflection in the room, or even hanging some cotton and linen fabrics, is also beneficial to improving the listening environment.
3. Replace the curtains with multi-layer ones, and choose thick fabrics to eliminate resonance of sound waves reflected by glass.

Run-in

"Run-in" refers to the process of further aging and stabilization of speakers. Speaker is a transducer that converts audio signal into mechanical vibration to make sound. It is composed of many mechanical parts and electronic components, just like a newly bought car needs a period of "running-in". Although the speaker has gone through many processes and times of intensive aging before leaving the factory, it is beneficial to "run-in" the newly purchased sound box at home for a certain period of time, which can stabilize the playback sound of the sound box, remove the stiff feeling and improve the sound quality. The time for "running-in" is generally 48-100 hours. "Run-in" at home can be a simple, or it can be done simultaneously with normal listening to music, because when listening to music at a generally moderate volume, this process itself is also "running in". As time goes by, the speaker can be cooked in about a month, calculated by listening to it for 2-3 hours a day. The music themes selected for the box are mainly symphonies and pop music, etc. The information of each frequency band of this kind of music is relatively rich, which can make all frequency bands of the speaker "run in". Remember not to turn up the volume too much in the process of "run-in", because longterm overload is easy to burn out the speakers, and such noisy sound will also make neighbors and family members
feel uneasy.

Wiring method

The quality of the connecting cable between the speaker and the power amplifier directly affects the playback quality of the sound. It is recommended that you use the oxygen-free copper speaker cable with thicker wire diameter. The higher the purity of the copper wire, the better the conductivity, the less likely it is to age, and the easier it is to ensure the lossless transmission of audio current. As for enthusiasts with higher requirements, they can choose some better quality copper speaker wires, silver-plated wires and other high-quality wires with new composite materials, so as to obtain better sound performance.

Generally speaking, the main speakers (FL, FR) bear relatively large power, so the speaker cable with thicker wire diameter should be used. The center speaker (C) can use the same speaker cable as the main speaker. Surrounding speakers (SL, SR) can use a slightly thinner speaker cable than the main speaker cable because of its low power. Its length should be just enough or a little allowance should be left to avoid unnecessary transmission loss caused by too long wires.

Figure 3

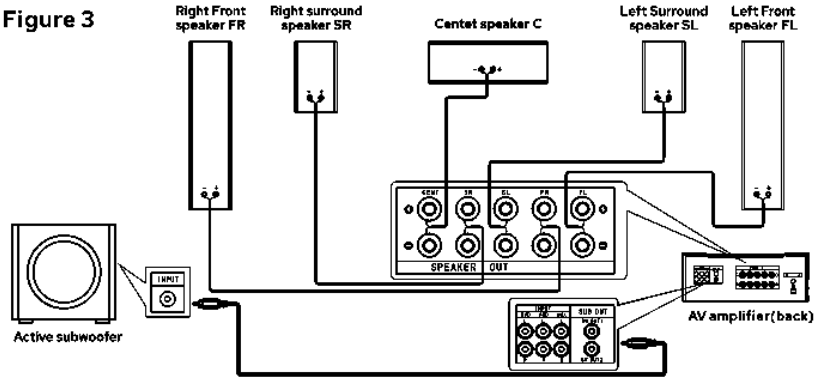
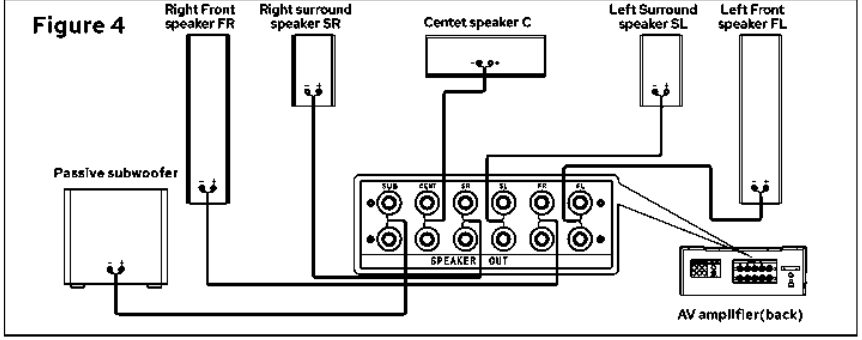


Figure 4



Wiring method

Figure 3 shows the wiring diagram of active subwoofer, the signal INPUT of subwoofer and the subwoofer signal output of power amplifier.
SUB OUT connection; Figure 4 shows the wiring diagram of passive subwoofer, which is connected with the sub power output of power amplifier.
Connect. Do not connect two power amplifiers to a set of terminals of the speaker at the same time, which will easily damage the power amplifier and the speaker. Do not add fuse and other devices between the power amplifier and the speaker cable, which will damage the sound quality.
The connection between the sound box of each channel in the home theater and the power amplifier must be more correct in phase connection, which is the first condition to obtain good sound quality.
When connecting, pay attention to the fact that the phase of the input terminal of the speaker and the terminal of the power output of the corresponding channel of the power amplifier can't be wrong: "+"phase versus"+"phase and phase versus"-"phase. Generally, the "+"phase is identified by red, while the "-"phase is identified by blue, black or white.

Note: Before wiring, the power switches of all connected audio equipment must be turned off.

Selection of amplifier

In addition, the choice of power amplifier should be considered from two aspects: technical index matching and timbre trend.
1. Technical indicators of power amplifier and speakers to match:
Impedance matching: Most modern transistor high-fidelity power amplifiers can directly drive speakers with rated impedance of 4-8 ohms. When matched with HiVi high-fidelity speakers, there is generally no problem of impedance matching except the difference in output power caused by impedance difference. When the power amplifier is matched with the speaker, the corresponding impedance terminals of the power amplifier must be connected according to the rated impedance of the speaker, so as to prevent the abnormal operation of the power amplifier of the electronic tube caused by impedance mismatch and affect the normal sound quality.
Power matching: The nameplate on the back of the high-fidelity speaker is marked with the acceptable power (RMS) of the speaker, and the upper limit of the power range of the speaker should be taken as a reference. In order to give full play to the good music reproduction ability of hi-fi speakers, the rated power (RMS) of hi-fi power amplifier should be 1.5-1.7 times of the upper limit of speaker power range; If you have a preference for pop music, classical music and other dynamic music works, the rated power (RMS) of the power amplifier should be 2-2.5 times of the upper limit of the speaker power range. For example, if the power range of the high-fidelity speaker is 10-60W, the rated power of the high-fidelity power amplifier is 90-102W, taking the upper

Selection of amplifier

limit of 60W as a reference, which can meet the general application. For pop music, classical music and other dynamic music, it is 120-150W.
2. Choice of timbre trend:
Different hi-fi amplifiers with speakers will have different timbre trends. Up to now, no one can directly show the sound quality of audio equipment such as power amplifiers and speakers. Therefore, SWAN suggests that you actually listen to the matching of power amplifier and speaker to obtain the timbre suitable for your taste.
You can also consider purchasing SWAN Hi-Fi Power Amplifier to match your speakers.

Low frequency calibration

In order to take care of the listening habits of most users, the low-frequency part of the sound pressure curve of the speakers (mainly referring to larger speakers) is delivered before the factory.
Adjust it into a raised shape, and the sense of low frequency will be fuller. If you like this kind of sound feature, you can adjust it unbounded. If you want to hear the bass with straight response, you can put the two sponge sound-absorbing columns that come with the box into the inverted hole of the sound box, and the low frequency response of the sound box will become flat. As for bass, it all depends on personal preference, equipment collocation and the requirements of listening environment. The advantage of this is that if the bass of a pair of speakers is originally lacking, it is almost impossible to raise its bass only by simple external treatment. For a pair of speakers with sufficient bass, it is much easier to reduce the bass in a simple way.
More importantly, not all models of speakers and distribution sponge sound-absorbing columns, only the speakers with distribution sponge sound-absorbing columns can make bass adjustment. Please pay attention.