

USING SKYWIRE AUDIO CABLES

By Don Palmer, Highwire Audio

Skywire Audio cables improve the resolution of audio systems by suppressing the noise that veils and smears the music and the ringing which causes distortion. The materials and construction techniques have been selected to give maximum performance, but with an extended break-in interval before this performance is fully displayed.

EQUIPMENT COMPATIBILITY

Skywire Audio cables are revealing and neutral, and the sonics of the equipment will clearly show through. These are not the cables to use to correct for equipment smoothness or tonal balance issues. However, they will allow improvements to be heard clearly and accurately.

CABLE DIRECTIONALITY

The directionality of the conductor wire and the positioning of the suppression coils have been matched to give an evenly balanced, top to bottom response. The direction arrow indicates signal flow from source to load. In this signal flow direction, Skywire cables will have good depth and smooth response. In the reverse direction there may be a more forward presentation. Users may experiment with the cable direction to match the presentation to their systems.

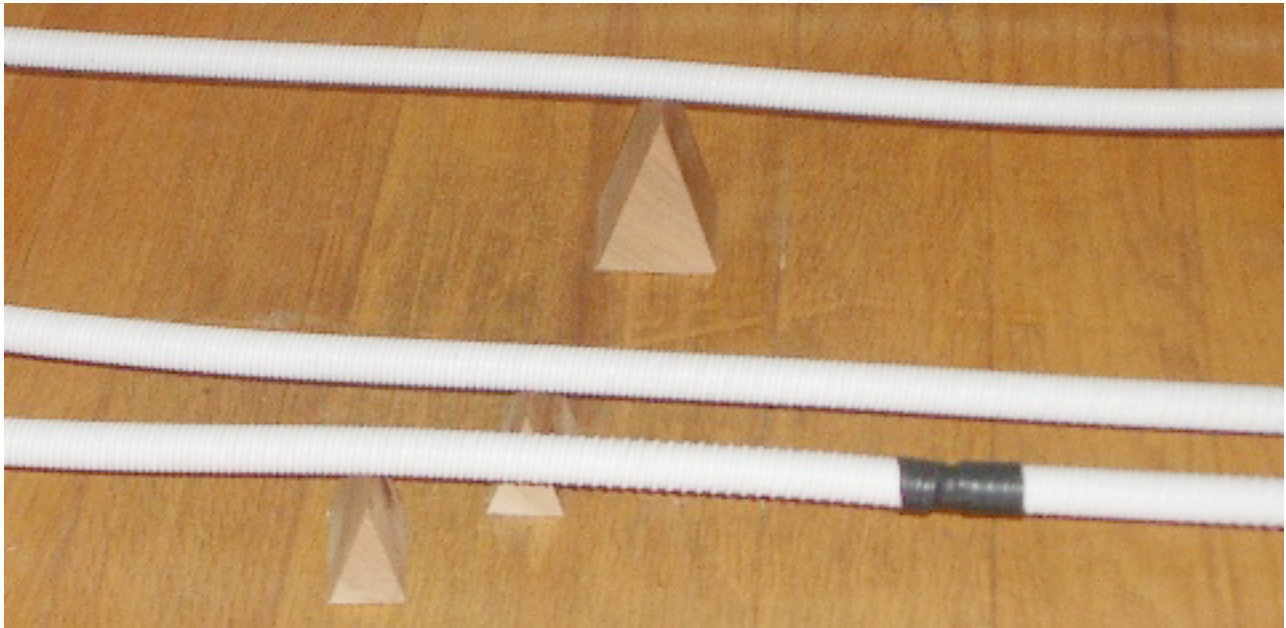
PROXIMITY TO THE FLOOR AND RUGS

We take a lot of care to use low dielectric constant and low dielectric loss insulation materials. When the cable is placed on a floor or a rug, the dielectric effects of those materials are added to the dielectric effects of the insulation materials used in the cables. Wood and rug fibers are not dielectrics I would use to make a high end cable. Nylon® is a particularly poor sounding insulation material and many wall-to-wall carpets are made of some form of Nylon®. Rather than allow the cables to rest upon the floor, the user should consider some form of cable support.

I have experimented with dozens of different cable supports. Some have a dielectric sonic and some have an acoustic sonic character. I am currently using maple wood wedges tapered to minimize cable contact. These are 1 to 2 inches high, and have a minimal dielectric sonic and a smooth acoustic sonic character.

PROXIMITY TO FOREIGN MATERIALS

Skywire cables are sensitive to the proximity of other materials. For best performance the cables should be dressed away from all other cables, power cords, equipment stands, walls, and especially metal objects.



CABLE BREAK-IN GUIDELINES

We all want to hear what new products will sound like in our systems as soon as we put them in. Unfortunately many new products will take some time to break in before they sound their best. Skywire cables take a longer time to break in than most cables and are more similar in break-in to electronic components.

In the early 1990s the Highwire Series 320 copper cables would sound broken in after 3 weeks. The break-in time got longer and the artifacts more audible when we moved to the more revealing silver plated copper cables. Skywire cables can take one or more months to fully break in.

I have come to several conclusions after having lived through hundreds of break-in cycles over a twenty year period.

- 1 The lower the ultimate noise floor in a cable, the longer it will take to break in and the break-in artifacts will be more apparent.
- 2 Once the cable breaks in to the point where it reaches the noise floor of the rest of the system, it will seem to be done. If the noise floor of the system is high then that noise level will mask the resolution of the quietest cable. In this case the break in of the quiet cable will seem to be shorter than if all the cables and components had a low noise floor.
- 3 A system using all Skywire Audio cables and power cords will have a very low noise floor and will take a long time to break in. The artifacts will be most clearly heard. The low noise floor will make the artifacts stand out more.

4 Skywire cables have a cumulative benefit when used together in a system. When a system having all low noise cables does fully break in, the results are unexcelled in palpability, separation, space, and ambiance.

5 After break-in, a system with a very low noise floor will expose the quality of the recordings, either good or bad.

BREAK-IN TIME

The time to break in for a Skywire Audio cable seems to be more a function of calendar days than it is of playing hours. They do need to be played but there does not seem to be much difference between playing 24 hours a day and playing 6 hours a day.

The type of signal played seems to have an effect on the cable break in. All of the frequencies from bottom to top must be played through our cables to fully break them in. I recommend break-in with mostly music, occasional pink noise, and some time with the equipment on but without any signal.

BREAK IN SEQUENCE

Skywire cables start out with a nice top to bottom balance that will be similar to the final balance of the cable but will be soft and slightly veiled. The sound will be without the clarity, extension, or tight bass the cables will achieve after break-in.

They will then start to get lean and the balance will tilt up in upper midrange and lower treble. This is not permanent and they will come back closer to the initial balance. This will be the worst for the first several days and then the balance will slowly begin to come back over the next few weeks. The cables will have some edginess during this phase.

The cables will start to clean up from the low frequencies up. During this phase there will be frequency anomalies above the range where they are breaking in. This usually results in one frequency range with some emphasis and a higher frequency range of depression. They will usually change slightly every day or two. Ongoing changes are an indication that the cables are still breaking in.

This clean up sweep can occur more than once. When one sweep is done another may start and each time through the cables will come out clearer and tighter. After the frequency response and clarity have settled down, the ease and flow of presentation will improve.

HANDLING A CABLE DURING OR AFTER BREAK-IN

When a cable is handled the cable noise floor will increase temporarily and it will need to settle in for some time. This will be longer if the cables are bent tightly.

SYSTEM REBALANCING AFTER INITIAL BREAK-IN

Skywire cables are designed to have an open and evenly balanced music response and are exceptionally coherent. The room tuning and speaker alignment may need to be adjusted to optimize the sonics after the cables are broken in. If a number of Skywire cables are added, the best results may be obtained by reevaluating all the items that affect the system sonics after break-in. The following are some suggested steps.

- 1 Remove the room tuning and any after market feet under the equipment.
- 2 Make sure all the system components are plugged in to the same AC phase.
- 3 Dial in the speaker position.
- 4 Add room tuning and set up the components to optimize the sonics.

On tube equipment try floating some of the power cord grounds. There may not be audible hum, but floating some grounds may lower the noise floor. Also try different output impedance taps on transformer-coupled tube amplifiers.

AC POWER LINE NOISE

As the inherent noise floor in the audio system gets lower, the contribution of noise from other electronic appliances in the home becomes an larger fraction of the total audio system noise, and an increasingly large factor in the quality of the music.

I recommend some method of reducing the RF noise from the offending equipment at the source of the noise being put on the line. AC filters can reduce the noise that other equipment can put out into the house wiring

Connecting the AC power of some of the audio system components to one phase (see note below) and the rest to the other phase can cause noise and sonic degradation. I recommend connecting all the audio system components to one phase. Particularly noisy appliances should be fed from the other phase if possible.

Note: In this document, power “phase” refers to the USA domestic standard of split single-phase power, where the branch circuits deliver 120 volts from one or the other side of the 240-volt secondary to a neutral, grounded center tap. The result is that the 120 volts is high on one side when the 120 volts is low on the other side. Many audiophiles including ourselves have found better performance when all the components in the system are supplied by one of the two sides (“phases”) of the split 240 volt line.

CHANGING THE SYSTEM CONFIGURATION AFTER BREAK-IN

Each power cord and each interconnect has its own ground connection to the equipment. Because of these parallel ground paths there are certain ground currents flowing in the cables. These may not be audible but they can sometimes be severe enough to require floating of some grounds. This is true of all grounded cables.

The parallel ground paths also create paths for RF current in the cables. The RF flows will be higher in some cables than in others.

When the ground-loop current and RF flows are altered due to changing equipment or wiring configuration, the cables will need some resettling break-in time. These changes can include adding or changing power filters and adding or changing a component. Installing a new Skywire cable will both lower the noise floor and change the RF current flows.

AUDIO SYSTEM SETUP

The following is a summary of my thoughts on system setup and AC power. This is what I have done in my own home.

I have a custom-built rack of my own design. It is made of 1.5 inch thick MDF and it is very good sounding. I have tried many types of mounting feet under my components. All the different types of feet had different benefits but each had a sonic problem that was not acceptable to me. My components are currently sitting on their own stock feet.

One reason that I am not using supplemental mounting feet is that all the audio components in my system have been voiced by the designers on their own feet. Therefore I use this as a baseline for comparing with other feet. I am not saying that all components would sound better on their own feet or that supplemental feet always degrade the sound.

In the past I have had up to twelve room tuning panels in my listening room. I am currently using only two. They are in the corners behind the speakers to reduce the reflection from the sheet rock in the corners. They are made of 1/2 inch plywood with a felt covering. I have some unevenness in the midbass from room resonances but everything I have done to try to reduce it degrades some other part of the frequency range. So I live with it.

I have a large opening from my listening room into the main hallway in my home. This opening is directly to the left of my listening position and caused a hollow sonic and an unbalance in the sound. I have blocked off three quarters of the opening with the same type of panel I have in the front corners. The panels are movable and I set them in place when I am listening.

I have a single dedicated duplex outlet running to a separate breaker in my inside subpanel. All my components are run to this outlet so they are all on the same phase. This could be improved by running two dual-duplex outlets to two separate breakers on the same phase on the outside panel, and running my digital components from one breaker and the analog components from the other breaker.

My transport, DAC, and preamplifier are plugged into a custom multiple outlet box with a Highwire power cord. I would likely be better off to plug them directly into a dual-duplex outlet.

I do not use any power conditioning with my audio system components. My system is already so quiet that some of the available power conditioners actually raise the system noise floor.

I've found that High End noise filters that include isolation transformers on the audio equipment lower the noise floor but also limit the current availability and can cause some compression of the music.

I have my TV, DVD player, and television amplifier on power strips and turn off the power to them when I am doing serious listening. This turns off the digital logic that runs in standby mode whenever they are plugged in.

My computer system has an Uninterruptible Power Supply that puts a high level of noise into the AC line. I also have a DSL modem and Router that run all the time. I use local noise filters on that equipment to reduce the amount of digital noise fed back onto the line.

There are some items in the house that generate noise on the AC line that I can not turn off. They are the digital wireless telephone, the TiVo, and the computer UPS. I am using some custom AC noise suppressors on the outlets for those appliances. They are parallel inductor-capacitor networks and they reduce the noise significantly.

I use Power Wraps on numerous power cords and power strips around the home to reduce RF noise from other appliances. I also put several Power Wraps on the incoming telephone line and on the telephone line and power cord to the wireless phone.