The "HELIX IMAGE" Speaker Cable

02/06/17 12:17 *HELIX USB Cable*HELIX IMAGE Speaker Cable

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Fine Art Photography

Inspired by moments in time

MY GOAL: -
To bring great sounding cables and "Tweaks" to the DIY Audio Enthusiast :-)

PLEASE NOTE: -
I have NO affiliation to the products or companies mentioned on these pages

The products mentioned are those that I have used over time and found to perform very well.

For links to products mentioned in the text see *Product Links below

GOT QUESTIONS?
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So What's Here..

Since their introduction, The Helix Speaker Cable has undergone a significant change to their design, by enlarging the diameter of the Helix and adding wooden beads to centre the signal wire within the helix.

So what makes Helix cables work?

The premise behind its helical geometry (or architecture) is eliminating parallel conductors, since...

- if two parallel conductors are in close proximity for an extended distance, and current is passed down them, then ***noise & distortions*** will occur within them.
- Speaker cables have to deal with larger voltages and currents and can be subject to more severe distortions than Interconnects, however, their signal is not amplified like the signal in the interconnect and relative to the actual signal the distortion is quite small

In “conventional” speaker cable architectures, the signal conductor and the neutral conductor are "generally" side by side in extremely close proximity for the length of the cable, therefore in my mind, I consider it reasonable to assume that some noise, however small, will occur within the signal conductor and neutral conductors.

Why would this matter? Isn’t the neutral effectively connected to the “ground” ?

Well, the neutral conductor is actually connected to the neutral side of the circuit of the amplifier.

- Any noise that permeates through the neutral side of the components circuit, will have a negative impact on the amplified signal, resulting in distortions in the signal, which is output to the speakers.

And it gets even more complicated ...

For more information on cable design issues please read the three articles below that talk about the many problems that challenge cables builders.

They will provide a great deal of insight into the many parameters and design techniques employed to build cables that excellent in their performance.

https://www.psaudio.com/article/cables-time-is-of-the-essence-part-1/

https://www.psaudio.com/article/cables-time-is-of-the-essence-part-2/

https://www.psaudio.com/article/cables-time-is-of-the-essence-part-3/

So, how do Helix cables prevent that from happening?

In the Helix design, the neutral conductor is wound around the signal conductor, so the neutral is NEVER parallel to the signal wire.

This minimizes -

- induced noise
- Proximity Effect
- Rise Time and Decay Distortions
- Minimize Dielectric influences

VOILA! - most “cable related problems” are eliminated !!!

(pretty much)

But in addition to that, the Helix acts as a Faraday Cage surrounding the signal wire, which impedes the effect of external RFI/EMI on the signal.

This makes the Helix Geometry one of the most noise-free cable geometries available.

If applied to ALL cables in a system, the resulting level of fidelity you probably thought could only be attained by having components costing considerably more, is only constrained by the components themselves and todays components are actually extremely good.

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RSS Feed

What will you hear?

- for me the most noticeable improvement were the details that came to life in the venue acoustics
- i.e. the echoes and reverberations that surround each artist and instrument.

At first, it can sound as though you have an echo problem in the room, but I have several tracks where there are no reverberations, so playing those confirmed my room acoustics were perfectly fine.

Other attributes that are clearly audible include...

- clarity and details
- tonal neutrality, or lack of colouration
- dynamic performance i.e. punch and crispness
- bass depth, bass control i.e. more texture.

But one effect that took a while for me to realize just how much it effects the sound is an audio effect called phasing.

Phasing controls the placement of instruments and artists in three ways.

1. Their location within the width and depth of the image
2. Their location outside of the speakers
3. The illusion of the “projection” of sound around the room, even behind the listener e.g. like surround sound

We all know if you connect the speakers out of phase the image becomes muddled and the bass performance drops off.

But varying the phase by tiny amounts can move the position of instruments and artists within the image to the point where they overlap and results in a muddled image.

The noise impacts the phase of the signals of left and right channels differently, resulting in an inaccurate and muddled image.

Since the Helix Geometry eliminates most all of the noise created inside the actual cable - you will notice an incredibly precise placement of instrument and artist within the image AND an incredibly large image that melts the boundaries of the listening room and envelops the listener.

Now the speakers are truly “invisible”

PLEASE NOTE: Your system will probably not achieve its full potential by installing just one set of helix cables - "Audio Nirvana" becomes within reach once ...

ALL cables are built using the helix geometry !!!

How To Make Them...

FIRST: determine the “Direction” of the Helix - see Inside The Helix Geometry.

Here are the parts...

- **Neutral Conductor: 12 gauge stranded UP-OCC Copper - e.g. Neotech**
- **Signal conductor: PLEASE SEE NOTE-A below**
- **One five foot 1/2” (12mm) fibreglass rod from home depot**
- One set of KLEI™Classic Harmony Banana plugs
- Teflon Tubing

The neutral conductor should be 2.5 times longer than the signal conductor, although you can experiment with this ratio, but I would use this ratio as the "low end"

E.G. for one **10 ft cable PAIR** you need

- 20 ft of signal conductor i.e. 10ft x 2
- 50 ft of neutral conductor.

NOTE-A: The Signal Conductor

My favourite wire, which provides a more detailed and dynamic presentation is the "Air" adaption,
i.e. a double strand of bare 16 gauge UP-OCC Solid Copper (e.g. from Neotech) and then inserted into a teflon tube.

Another very good signal conductor is 2 x 18 gauge UP-OCC copper with AirLok insulation from VH Audio - i.e. if you prefer to leave the insulation in place - for a more "relaxed" presentation

Tips on Installing the Banana plugs

Please review this link...

http://www.image99.net/blog/files/tag-banana-plugs.html

Please note: the images below may not reflect the actual wire identified above.

Cut to length the neutral conductor - this should be 2.5 times the length of the signal conductor

Put a very tight 90 degree bend in the conductor and tape to the fibreglass rod

Place the end of the fibreglass rod into the chuck of a variable speed drill

Slowly wind the conductor onto the rod

Once the other end of the conductor is reached - leave 6”-8” of straight conductor

If using the "Air" adaption for the signal conductor

- cut two lengths if wire equal to the length of the cable you are making
- insert each wire into a teflon tube
- tightly twist the two wires together at one end
- 
- Place the Teflon tube over each wire
- twist the strands in a "gentle twist" - i.e. one twist every 4-5 inches
- 
- and finish by tightly twisting the other ends together to maintain the gentle twist

If using the VH Audio wire as signal conductor

- cut two lengths if wire equal to the length of the cable you are making
- tightly twist the two wires together at one end
- twist the strands in a "gentle twist" - i.e. one twist every 4-5 inches
- 

- and finish by tightly twisting the ends together to maintain the gentle twist

- Optionally, you can insert the twisted pair into a cotton sleeve and secure each end of the sleeve with a piece of heat shrink

I use a 4" (10cm) piece of Heat shrink tube at the ends of the wire to provide additional support.

Insert the signal wire into the helix coil

Attach the connectors of your choice - in my case I prefer KLEI bananas - Voila!

I highly recommend the KLEI™Classic Harmony Banana Connector/Adaptors because as you will read, they are exceptionally good and elevates the performance of these cables to a whole new level

These cables provide an extremely high resolution listening experience on all systems - i.e. once burned in

They have low levels of capacitance and reasonable levels of inductance, so they are perfect for most systems, especially high current solid state designs.

Please allow *150 hours burn in* before making any judgement as to their abilities.

Please note: you are free to try whatever conductors you think might work - but two

the conductors identified above provide exceptional performance and value.

If you are thinking that 14 or 15 gauge is too thin to produce an excellent bass performance, I would suggest you try them first. I recommend a heavier gauge wire if the cable is connecting low impedance speakers (e.g. 2 or 4 ohms) to a high powered amp (i.e. in excess of 600 watts)

You will find the characteristics of the cables change during burn-in

- they will sound very good at first
- after around 12 hours their performance will degrade - bass will fall off and some distortion will occur
- after 30 hours they really start to shine
- by 150 hours they sound exceptional and will continue to get better

They provide exceptionally detailed and a well controlled deep bass performance

The clarity of these cables is superb, as is the dynamics and imaging

Total cost for a 10 ft pair is around $350 US. (i.e. depending on the wire used)

I have compared them to cables costing upwards of a couple of thousand dollars and the Helix are superior across the board.

Hard to believe?
if I hadn't heard it for myself I wouldn't believe it either!

When I built these cables I was actually not expecting much in the way of improvement over my existing cables, which were on the pricey side and excellent performers

I thought they might come close to their level of performance - BUT...

I was **Blown Away!!!**

But REMEMBER: any system will not achieve its full potential by installing just one set of helix cables...

For optimum performance - ALL cables must employ the helix geometry !!!

These cables are truly exceptional, from a fidelity perspective and from a cost perspective they are excellent VALUE!.

For Helix cable spec's please see Its More Than Just Numbers - Isn't It?

I give them my ***"Best Bang For The Buck"*** award.

My Review System:

- Custom built turntable with a Soundsmith Denon DL103 phono cartridge mounted on an Audiomods Arm with one piece silver litz harness + **KLEI Absolute®Harmony RCA's**
- Simaudio MOON LP5.3 RS phono stage
- Bluesound Node 2 music server
- Bryston B135 Integraed Amp.
- Gershman Acoustics Sonogram speakers.
- DIY Speaker Cables - The HELIX Speaker
- DIY Power Cables - The "POWER HELIX"
- DIY Interconnect Cables


Give them a try - and - Enjoy The Music!

Helix Geometry Adaptions:

The development of these cables was something of a collaborative effort. it all started when I responded to a post on the Audiogon Cable Forum by Audiogon member Toddverrone (Todd)

Todd was already familiar with the Helix design since had had already made a couple of my Helix power cables.

We discussed possible approaches, but since I had not actually made a set of Speaker Cables I figured I'd better "Walk the Walk"

And so, the Helix Speaker cables (of the above design) were "born".

However, since Todd's speakers were configured for a bi-wire/bi-amp approach he wondered if there was a viable Helix Bi-wire solution in a single cable.

Taking the design above, I modified it in the following manner to incorporate two sets of conductors (LF and HF) into a single cable as follows:

- the two positive conductors would be wound around the fibreglass rod and then straightened out by hand, but leaving the kinks in the conductors in place.
- Each conductor is wound in opposite directions in order to stop them from being able to touch continuously to prevent EMI contamination.
- the two signal conductors would be placed inside two (LF and HF) helix neutral windings, but each neutral would also be wound in opposite directions - again to minimize EMI contamination.
- The net result is what Todd referred to as - one "bad-ass" design
- Perhaps I should name it the - ***Bad-Ass Helix Bi-Wire*** ?

As part of the process, Todd had first built a prototype along the lines of the original design above, in order to gauge what the single wired cable would sound like.

- This level if fidelity could then be used as a benchmark for comparison to the Bi-wired version.

Todd also used a high grade silver plated copper conductor for the bi-wire version

Final conductor details:

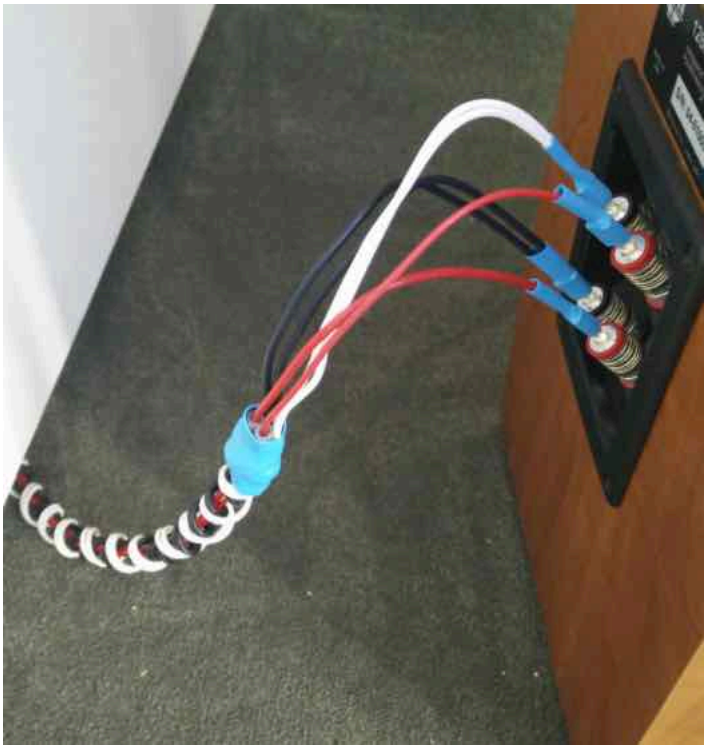
Signal Conductor

- One LF 12 awg conductor and One HF 14 awg conductor with a "kinky helix" wind in opposite directions,
- both are silver plated copper in ptfe from take five audio.

Neutral

- Dual LF 12 awg silver plated copper conductors in ptfe for the inner helix
- Dual HF 14 awg silver plated copper conductors in ptfe for the outer helix
- The 14 gauge was the outer Helix because it is easier to wind

See pictures below...



And The Verdict?

Todd's Feedback...

- *So far, they are superb!*
- *The same black background as the single helix, but more clarity from top to bottom.*
- *There's not more bass, it's just a bit tighter and cleaner.*

- *The mids and highs have greater clarity and come further out from the background, with better separation of sounds.*

So there you have it! - Seems like Todd is pretty happy with his creation.

Whether single wire or bi-wire these cables provide extremely good fidelity, dynamics and bass performance. But please remember to allow them to burn-in for around 200 hours before serious listening.

A special thanks to Todd for taking on this difficult task - winding those helix neutrals can be quite tiring on the hands

I give them my ***"DOUBLE Best Bang For The Buck"*** award.

 ***Give them a try - and - Enjoy The Music!***

Tags: Speaker
