

NEUTRIK Speakon connectors on vintage Hammond B3/C3.

by Dan.Vigin



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Binche / Belgium

Aug.2020

File : DVI_Neutrik Speakon_200828.doc
Date. : Aug.28th 2020
Issued by.: Dan Vigin

Forewords.

The Hammond company has never been really concerned by the electrical safety on vintage organs such as B3/C3 and the like.

Similarly, the connecting cables supplied with each Leslie cabinet are even not better. Those cables are not fastened at both sides (organ and Leslie) while carrying AC Mains ! If the organ and Leslie cabinet are installed in living room and never move for years then, of course, no problem will arise. However, professional players having to transport several times a week, then starts the real problems.

Nowadays, the solution adopted by most professionals is to replace the original Amphenol connectors by Neutrik Speakon ones and adequate cables.

Neutrik Speakon connectors can be found easier on the market than the original ones and they are much more sturdy, reliable and cheaper.

When envisaging the Speakon solution, two major topics have to be taken into consideration.

1. Safety regulations.

It has to be recognized that despite the fact that this way of doing is much more reliable and works fine, unfortunately on a safety regulations standpoint, it is not authorized (at least in Europe) because Neutrik Speakon connectors are simply not designed to carry AC Mains. Refer to Data Sheets NL8MPR and NL8FC of Neutrik.

2. Pin-out standardization.

The other negative issue is the standardization of wiring. When using the original Amphenol connectors and Leslie cables, they are all wired based under a similar well-known pin-out standard.

With Neutrik Speakon ones, at this stage, there is no common recognized standardization of wiring.

Several organ service centers have been contacted on the matter and all of them are using a different pin-out configuration.

Again, when the same organ is always in use with its companion Leslie cabinet with the same connecting cable, beside the electrical safety issue, apparently, there is no major problem whatsoever. Everything works fine.

However, when on a gig, rehearsal, studio, setup on stage in a hurry with little light if there is a swapping in the connections you can expect a 'blue smoke' getting out either from the Leslie amplifier or from the organ itself followed by total shut-off of the whole system.

Now the point is: 'How to cope with this situation? '

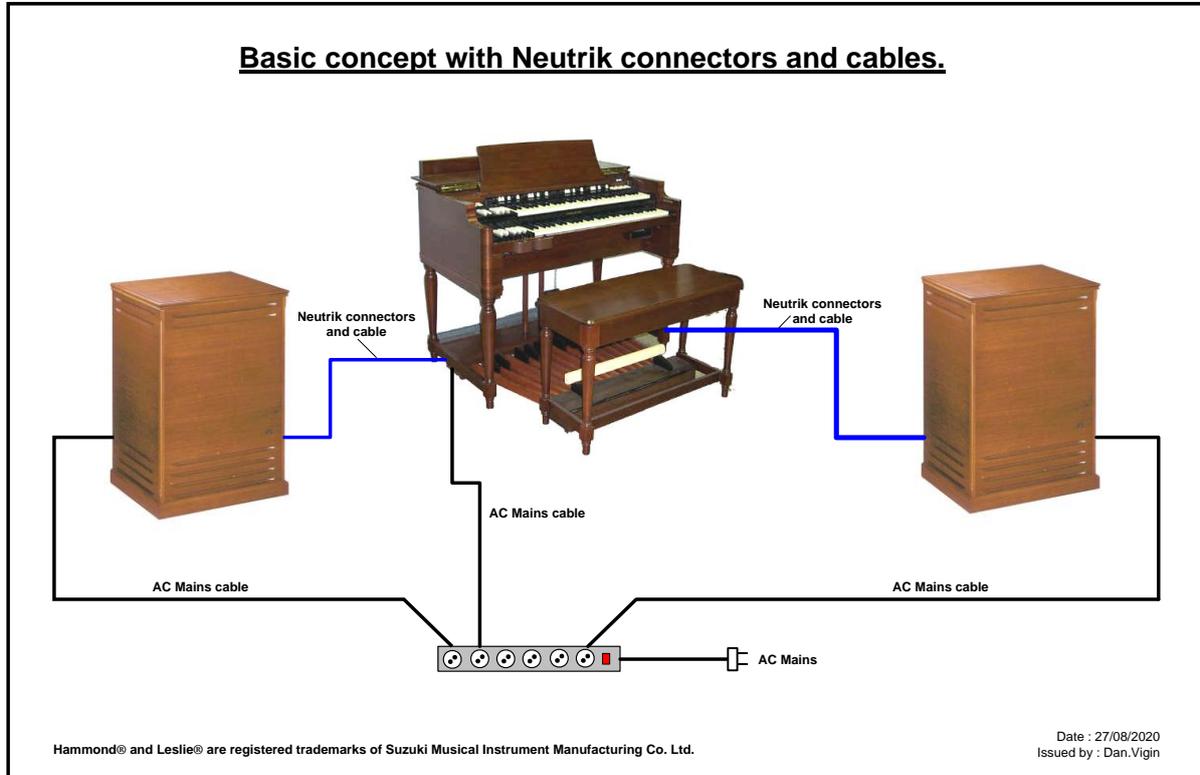
That's exactly the purpose of this chapter.

On the safety regulations aspect, there is a solution. However, concerning the wiring standardization, needless to say, it's still a big mess.

How to cope with this question of electrical safety regulations ?

Since it is not allowed to supply the Leslie cabinets with AC Mains through the Neutrik Speakon connectors, there is no other alternative than connecting Leslie's amplifiers directly through a separate AC Mains source.

Hereunder is the basic concept connection layout.



Unfortunately, some mechanical adaptations are required. One additional AC Mains socket has to be installed on Leslie amplifier chassis and the fuse holder has to be removed and replaced on top of the chassis.

Evidently, at organ console side, since the original Amphenol connectors are also removed, the outlet box has to be also modified accordingly.

See pictures here below.

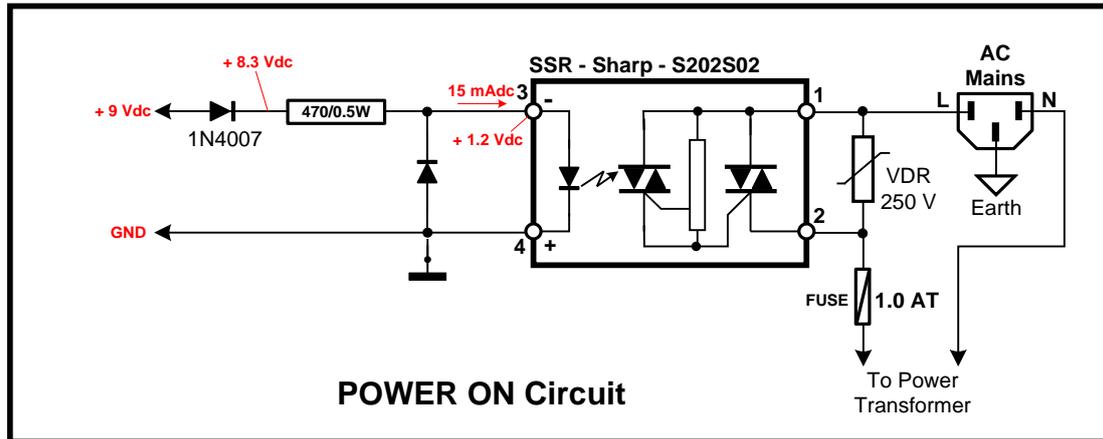


How does it work ?

The idea is to install one Solid State Relay (SSR for short) inside the Leslie amplifier chassis. SSR - S202S02 (Sharp) will do the job. It's quite easy to get a low DC voltage in the range of +9Vdc from the organ console (AO-28 in the case of B3/C3) to drive the optical device of SSR.

When switching ON the RUN motor, this DC voltage becomes available at terminal 3 and 4 of SSR through the Neutrik Speakon connectors and associated cable.

In turn, this LED of SSR will energize the built-in triacs that are acting like a simple static relay and AC Mains will turn ON the Leslie amplifier.



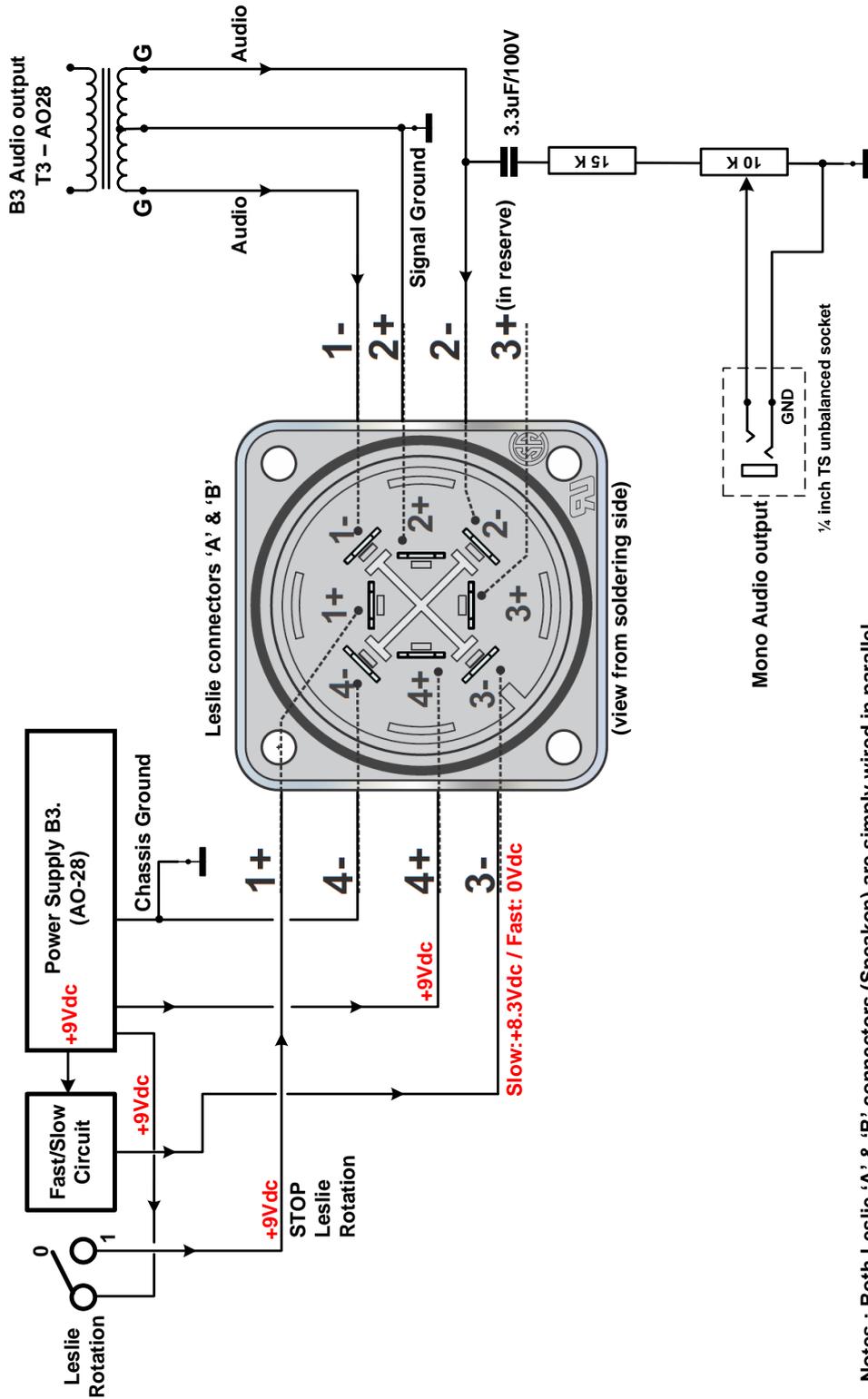
Since the electrical insulation between the low voltage (terminals #3 and #4) and AC Mains (terminals #1 and #2) is about 4 KV, this Sharp SSR meets most of safety regulations (see also Sharp S202S02 data sheets for more info).

Installation of this SSR is quite simple. Just one hole has to be drilled on the side of the Leslie amplifier chassis. The rest is just a matter of basic internal cabling and adequate insulation of wires.



The next pages provide the wiring diagrams of connections between Hammond B3 and Leslie 122.

NEUTRIK NL8MPR wiring - (B3 Side)



Notes : Both Leslie 'A' & 'B' connectors (Speakon) are simply wired in parallel

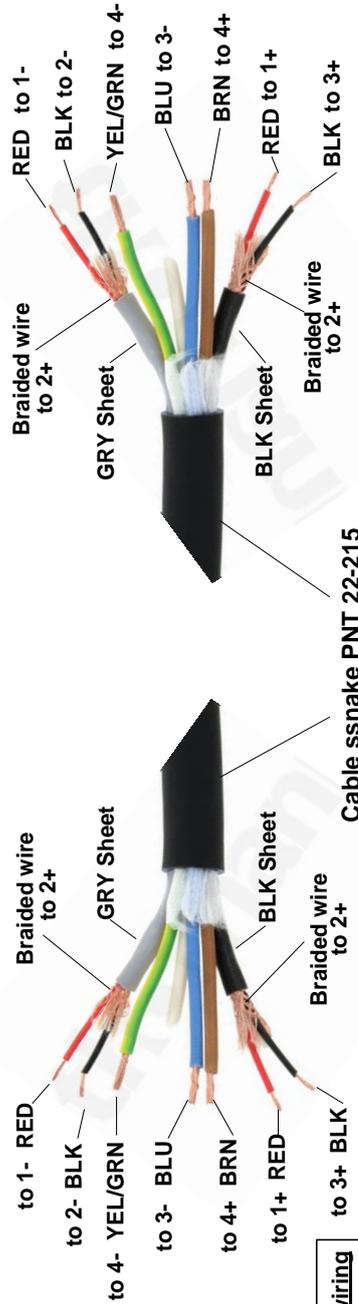
Hammond B3/L122 wiring through NEUTRIK connectors (B3 side)

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 Date.: 20.08.10

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NEUTRIK NL8FC - Cable layout.

Lockable Speakon connectors



Color code of wiring	
BLK	Black
BRN	Brown
RED	Red
ORG	Orange
YEL	Yellow
GRN	Green
BLU	Blue
VIO	Violet
GRY	Grey
WHT	White
PK	Pink
B	Bare

CONNECTING CABLE B3/LESLIE 122

Hammond B3/L 122 wiring through NEUTRIK connectors (Cable connection part)

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Conclusion.

As already mentioned, this type of connections is in line with the safety regulations requirements. However, since no wiring standardization does exist at this moment with Neutrik Speakon connectors and cables, unfortunately, there still remains a state of uncertainty in case of swapping Leslie amps or connecting cables.

One solution is to firmly attach a diagram sticker near the Speakon connectors that clearly identifies the pin-out wiring.

However, it has to be recognized with AC Mains being totally separated from Speakon connectors as described above, the risk of ensuing fireworks becomes minimal.

“ Never trust a non-standard Leslie connector to be wired to a standard that doesn't exist ”.

For information.

To be noted that with a separate AC Mains, it is also quite possible to drive a Leslie cabinet (L122 or L147) with five-pole XLR connectors instead of Neutrik Speakons.

Again, based on Sharp SSR S202S02, the same principle can be applied and works also fine. This principle has been experimented on several organs and Leslie's without any problem only for home players being sure that no swapping will occur.

Pictures hereunder show 5-pole XLR connections between Hammond X-66 and Leslie 147 amplifier.



Any positive comments or remarks would be the most appreciated.

Trust having been of some help,

Dan Vigin