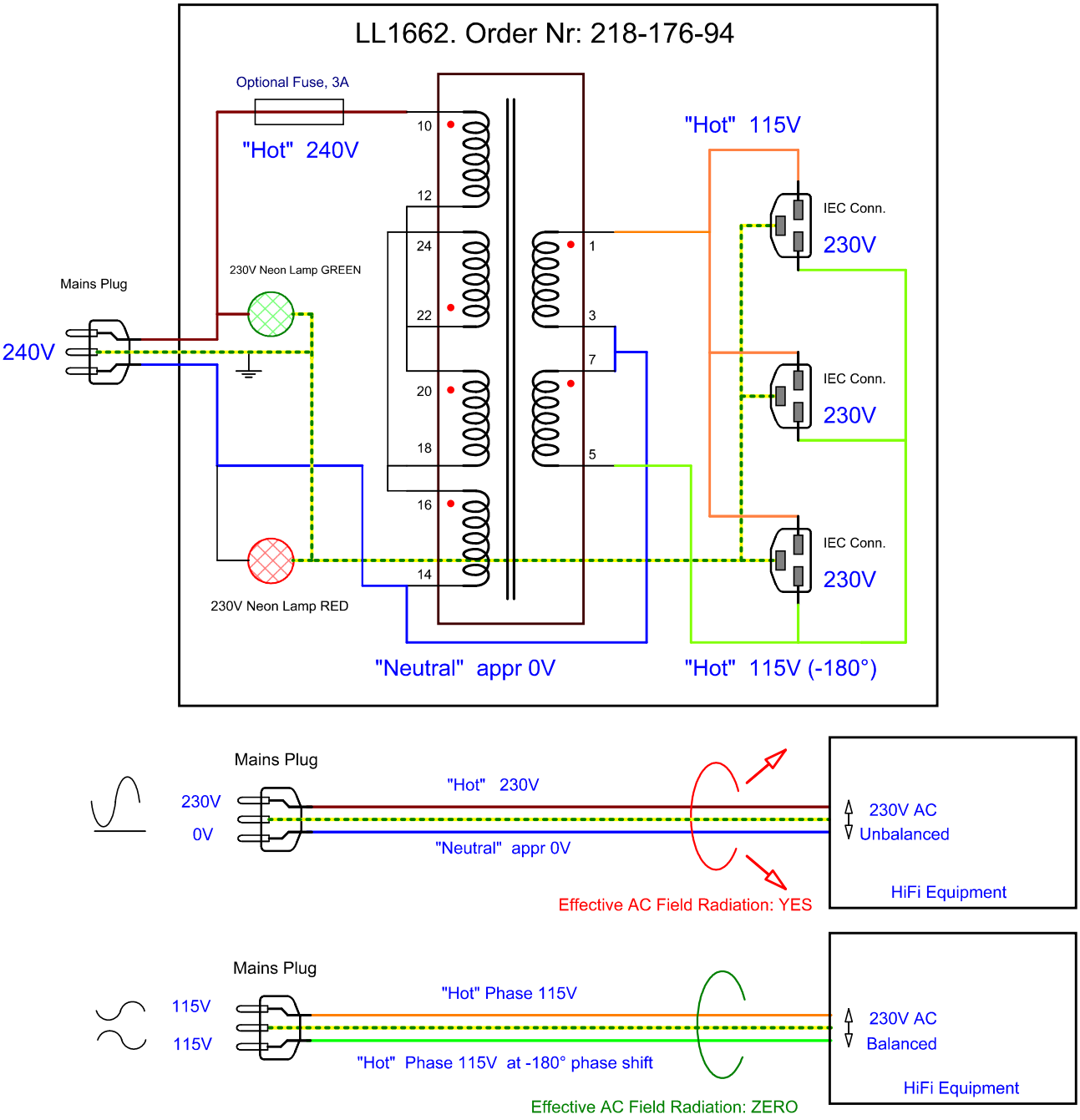

Functioning:

The GREEN Neon Lamp will burn when the Neutral wire (Blue colored) is indeed connected to the neutral, indicating good function. If not, the RED Neon Lamp will burn, and you must reverse the mains plug. When the green lamp burns, the transformer secondary center tap (12 and 16) is at "Neutral" Level, close to zero volt. Connections 10 and 14 will be at 115 Volts each, but in anti-phase. Like this, the output voltage will still be 230 Volt, but hum field radiation is now zero. This is called symmetrical signal transmission, which works just as well for 230V AC as for Audio Signal. In this case here, zero emission of AC hum signal will be the result. This can be of great advantage when near by equipment has very sensitive inputs, or when difficult cases of non-understood hum problems occur.

In depth explanation: Each wire radiates an electrical and a magnetical field, wich have to be considered separately. For the magnetical field of the two wires of an AC mains cable, these two fields are always in opposite direction, because the current flow is in opposite direction. This eliminates the magnetic field, regardless if the mains cable is drilled or not. The electrical fields of the two wires of the AC mains cable do not eliminate each other. In such case, so the standard situation, one wire of the cable is always at zero Volt (the "neutral" wire) and the other is at 230Volt, also called the "hot" wire. Electrical fields by definition build an average, like numbers do. So if one field is at zero, and the other is at 230V, the resulting field is like from one 115V wire. So at a distance of for instance 10 centimeter to a signal input, this is a field gradient of 11.5V per centimeter. Though it is at quite high impedance, such a field can still create a hum signal at unsufficiently shielded cables or inputs. This situation drastically improves, if each wire has it's electrical field in anti-phase, as done here. In this case, the electrical field of each wire is only 50% which is already an advantage. More important, they eliminate each other, as one field is positive, when the other is negative, and vice versa.

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