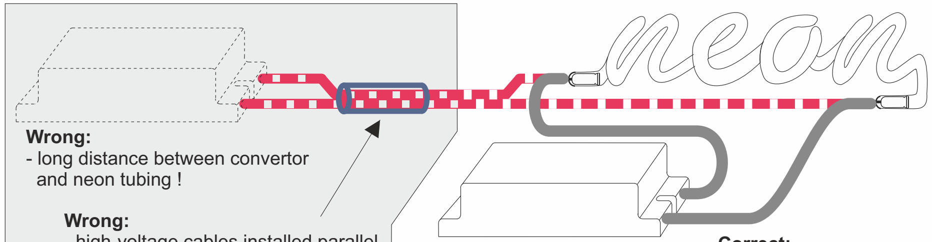
Installation advice for EVGs

Installation of the high-voltage cables



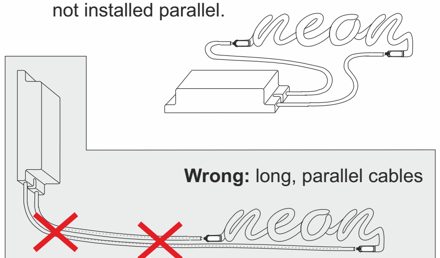
Wrong:
- long distance between convertor and neon tubing !

Wrong:
- high-voltage cables installed parallel in an additional cable tunnel !

Correct:
- high-voltage cables installed at a shorter distance to the neon tubing !

No long, parallel high-voltage cables

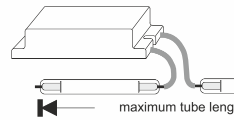
Correct:
Use short high-voltage cables which are not installed parallel.



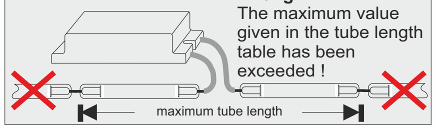
Wrong: long, parallel cables

Observe maximum connectable tube length

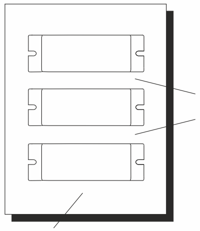
Correct:
The maximum tube length must be not exceeded !



Wrong:
The maximum value given in the tube length table has been exceeded !



Avoid accumulation of heat

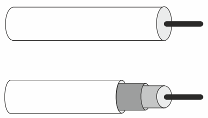


An accumulation of heat must be avoided by all means during installation. The distance between the convertors should therefore be at least 2 cm

The EVGs can be mounted directly on metal surfaces without any restrictions !

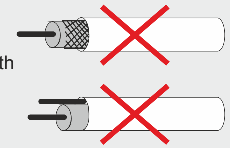
Avoid additional heat by direct sunlight !

High-voltage cable

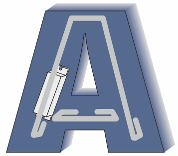


Correct:
Use cabels with synthetic insulation only
(PVC, silicone, etc.)

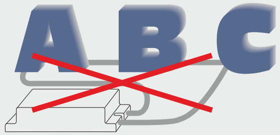
Wrong:
Never use cables with an earthed lead wire or metal sheathing !



Do not connect more than one neon letter



Correct:
Connect only the tubes of one letter to the EVG !

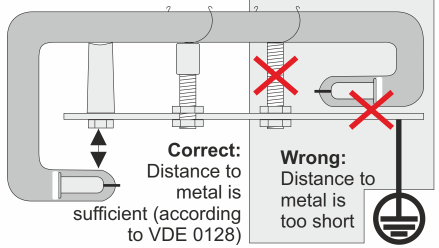


Wrong:
Never combine the tubes of several letters !

Sufficient distance to metal

Correct:
Use insulated tube supports only !

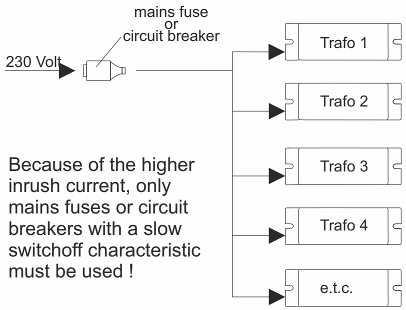
Wrong:
Do not use full metal tube supports !



Correct:
Distance to metal is sufficient (according to VDE 0128)

Wrong:
Distance to metal is too short

Use slow fuses



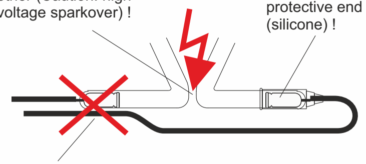
Because of the higher inrush current, only mains fuses or circuit breakers with a slow switchoff characteristic must be used !

Maintain clearance at high voltage

Special advice for 5 and 8 kV convertors:

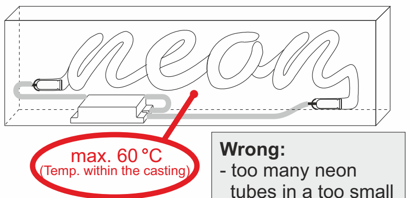
When connecting long tubes, make sure that the tubes do not touch each other (Caution: high voltage sparkover) !

It is always recommended to use protective end caps (silicone) !



The connecting cable must be installed at a distance from the other electrode connection !

Prevent heat accumulation



Correct:
Install the convertor in such a way that no excessive heat can be generated

Wrong:
- too many neon tubes in a too small casing together with the convertor
- external heat sources (e.g. solar radiation)

For 5 kV und 8 kV convertors

Due to the high secondary voltage and the integrated open circuit protection, the 5 kV and 8 kV convertors are **not suitable for outdoor installations !**

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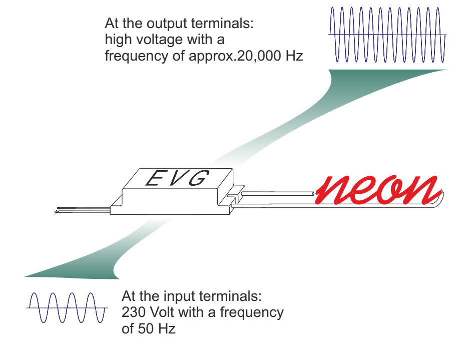
Installation advice for EVGs, part 2



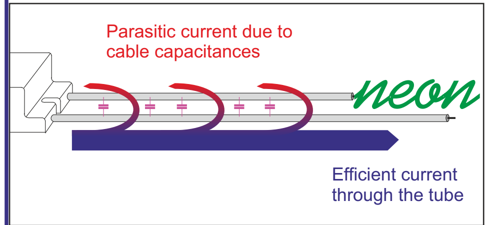
The EVG converts the mains voltage (50 Hz) into a high voltage with a frequency of approx. 20 kHz

EVGs work with an operating frequency of approx. 20,000 Hz. The great advantages of EVGs result from this relatively high frequency:

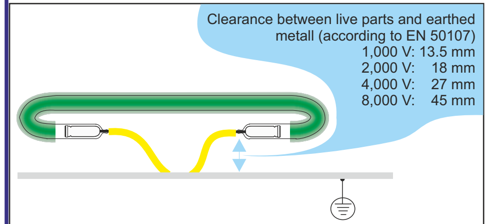
- small dimensions / low weight
- integrated earth leakage trip / open circuit protection
- flicker-free light
- dimmability, etc.

However, this frequency can also be the cause of faults, which must be taken into account when installing the system:
One possible effect of the high frequency - together with the high voltage on the output side - is the generation of a *capacitance current:*

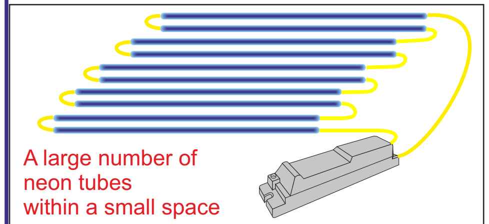
- between the high-voltage cables
- between an high-voltage cable and a metal object
- between tubes with a large potential difference



Parallel high-voltage cables generate capacitances which may cause a parasitic current to flow. Possible results are inconstant brighness, excessive heating of the convertor or radio interference. Therefore, as a rule:
Do not install the cables from the convertor to the tubing parallel to each other and keep them as short as possible.

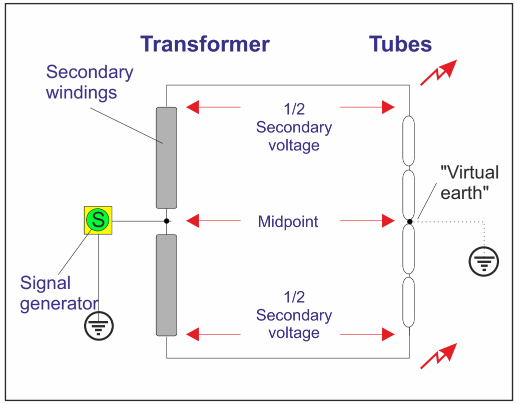


If the distance between the high-voltage connections (live parts) is too short there is the risk of a sparkover to the metal (electric arc), which can trigger the earth leakage trip. This process is supported by moisture, therefore:
Observe the minimum clearances (according to VDE)



If a large number of tubes are connected to the convertor in a relatively small space, the neon glows even if the maximum tube length is exceeded.
However, no more neon tubing should be connected than indicated in the tube length table as overheating of the convertor may occur !

Installation advice for EVGs



The installation regulation EN 50107 limits the voltage in the high-voltage circuit to a maximum of 5,000 volts to earth.
The maximum voltage in the circuit must not exceed 10,000 volts.

In order to limit the maximum voltage to earth to 5,000 volts, the original winding of the transformer is divided into two halves which are connected in series.

The midpoint of the windings is earthed.

The voltage generated by the transformer is reflected in the tubes as mirror image. Thus, the voltage to earth at the centre of the tubes is (theoretically) zero.

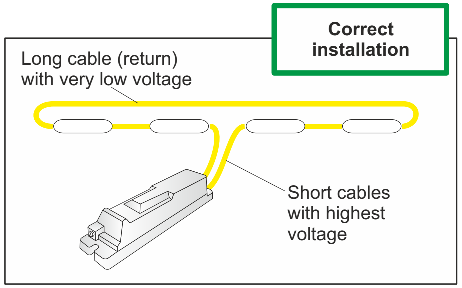
When it comes to installation, it is helpful to know something about the technical design of the transformers.

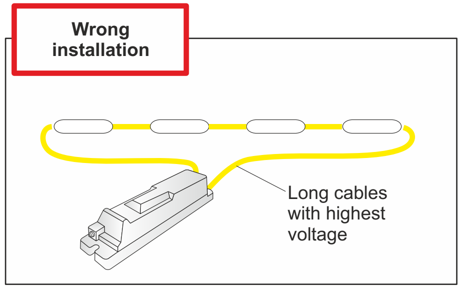
Transformers with an earthed midpoint have two "hot" ends. These are the terminals where the tubes are connected. Here, insulation and the distance to metal or between the terminals are of great importance since the total voltage is present at this point.

The voltage exists in the tubes in the same way as it is generated: the highest voltage can be found at the feeding points, decreasing continuously towards the centre. In theory, the voltage at the centre of the tubes is zero. Therefore, the insulation requirements are considerably lower at the centre.

The relationships explained here show why the high-voltage cables from the transformer to the tubes should be kept as short as possible: they carry the full high-voltage and - together with the capacitance of the cables - form a major potential hazard for any neon installation. This is particularly true for electronic converters (EVGs) as their high frequency intensifies the harmful effect.

Therefore, a ***central power supply*** with short cables must always be preferred to a supply from the outside using long cables.





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