

## Metal Cartridge Heaters



### Application examples

- Heating of oil, water, alkaline solutions
- Tool heating
- Hot plates
- Mold heating
- Welding Tools

DBK's knowledge of thermal management gives us the experience to guide and support you with your technical challenges - we can manage the complete project from concept to full production release.

Metal cartridge heaters feature compact size with high power density and are used for direct or indirect heating of oil, alkaline solutions or tools. They consist of a metal tube and a heating conductor wound on a soft ceramic winding element, surrounded by magnesium oxide (MgO) for electrical insulation. High-performance cartridge heaters are highly compressed and ground to size in order to ensure a fit installation and thus optimum heat dissipation. They achieve a surface load of up to 25 W/cm<sup>2</sup>. Alternatively, metal cartridge heaters with a similar construction such as ceramic cartridge heaters are available. They are installed in a metal tube with optionally vibrated MgO and achieve a surface load of up to 4 W/cm<sup>2</sup>. On customer request, all cartridges can be fitted with thermocouples in different sections or designed with a thicker top or bottom section to provide more power. For installation, we recommend a sufficiently large drill hole diameter (cartridge diameter + 0.5 mm) or additional mounting elements such as sheet metal flanges, sheet metal brackets or threaded flanges with gaskets. Depending on the tube sheath material, temperatures from 250 °C (brass) to 600 °C (stainless steel) are possible.

### Features

- Defined heat output due to resistance wire technology
- Power according to customer specification
- Operating voltage up to 500 V
- Operating temperature: brass up to 250 °C, stainless steel up to 600 °C
- Surface load up to 4 W/cm<sup>2</sup> (metal cartridge – uncompressed)
- Surface load up to 25 W/cm<sup>2</sup> (high performance cartridge - highly compressed)
- Sections with increased heating power possible
- Installation of thermocouples possible (top, center, bottom)
- Tube sheath diameters: 10; 12; 12,7; 15; 16; 17; 18; 20; 24; 28; 32 mm
- Tube sheath materials: Brass, stainless steel
- Electrical connection (one-sided): glass silk sheathed nickel wire (maximum temperature up to 250 °C), blank nickel wire, nickel wire with glass silk tube insulation
- Mounting elements: Sheet metal flange with fixing holes, sheet metal bracket with fixing holes, threaded flange with gasket

