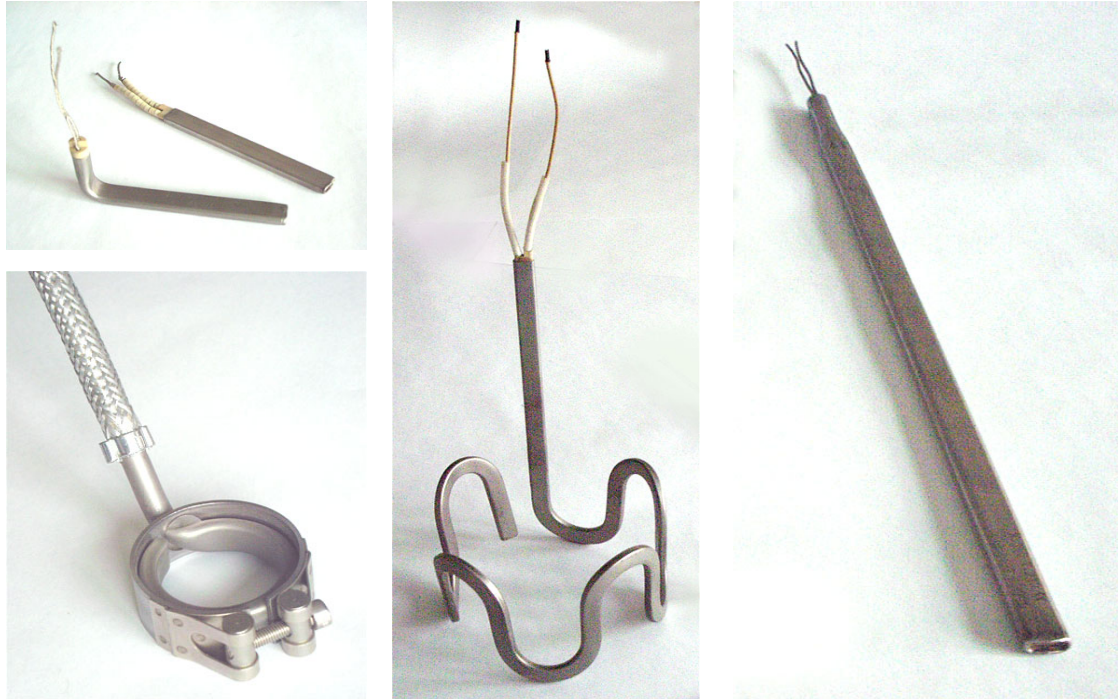


# Flat Cartridge Heaters



## Features

### Application

Application in process technology, heating of fluids, air and gases, for melting metals, radiant heating, contact heating.

### Dimensions

Flat oval cross section with dimensions 12.0 x 5.5 mm. Manufactured length has a minimum value of 100 mm and can be up to a maximum of 3500 mm.

### Tolerances

As per requirement. Tolerances are 12.0 +/- 0.1 mm, 5.5 +/- 0.1 mm. Tolerance determined for the length is +/- 2%, minimum being +/- 5 mm (Special tolerances of dimensions are applicable in case of deformed flat tube heaters).

### Material of the outer case of the tube

Nickel-chromium steel. Material No. 1.4306 (AISI 304L) – 1.4541 (AISI 321) – 1.4876 (Alloy 800).

### Temperature

Maximum permissible surface temperature on the outer surface of the heater is 600°C.

### Load

Depending on the intended purpose and in compliance with the operating conditions and media.

**Power**

Any value up to 15 Watt per centimeter of heating length, or up to a maximum of 6.8 Ampère (with restriction in case of relatively lower power and shorter length of the heating element under normal voltages). In case of special designs with varying power density, this calculation shall be applied to the total length of the heater.

**Voltage**

Any value, provided that it is technically feasible.

**Standard Connection**

Standard design: An isolated cable, with length 150 mm. Further standard lengths: 250 – 500 – 800 – 1000 mm. For other designs of the connection, see further below.

**Non-heating ends of the tube**

A minimum of 20 mm on the connection side and 10 mm at the end of the tube. The maximum can be any value in steps of 5 mm.

**Fastening**

Flanges, threaded nipple with screw heads in question.

**Construction**

Helically formed thermal conductor embedded in a high quality dielectric material and very highly compressed to a cross section of 12 x 5.5 mm by contraction of the outer case of the tube. The end of the tube is welded and the connection side is sealed. Data related to power and voltage is stamped on the heating element.

Final inspection is carried out as a routine check test in conformance with DIN EN 60335 – 1 (VDE 0700).

**Data required when placing the order**

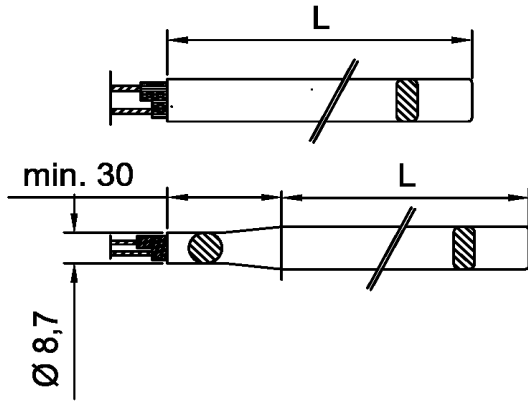
Quantity / length / voltage / wattage

(In case of special connection designs, construction and length shall be provided).

Sketches or drawings are necessary in the case of shaping, flange, fastening with threaded nipple and screw head.

If you wish to shape yourself the heaters, please, specify while ordering: "Heater(s) shall be soft annealed!".

Connection types



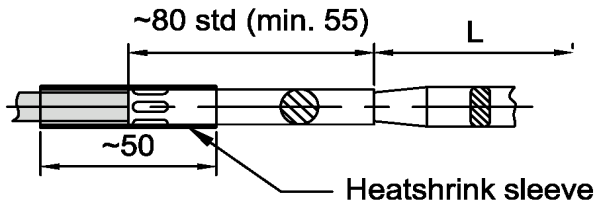
**STANDARD**

Cable options:

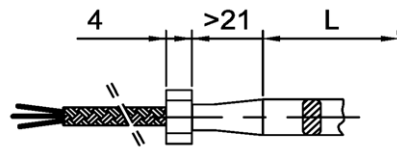
PTFE-insulated wires (standard) for up to 260°C

Fiberglass-impregnated insulation of wires for up to 250/350°C

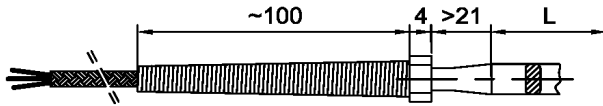
Ceramic-pearls insulated wires for up to 650°C



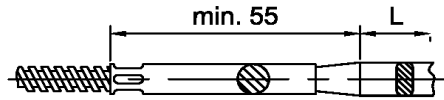
**SILICON CABLE**



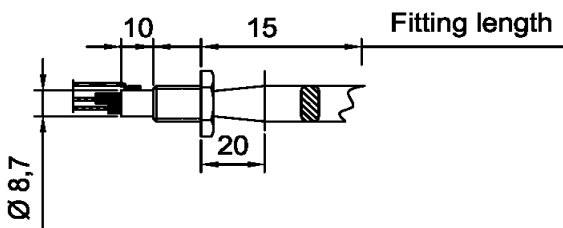
**FLEXIBLE METAL BRAID**



**FLEXIBLE METAL BRAID WITH PROTECTING SLEEVE**



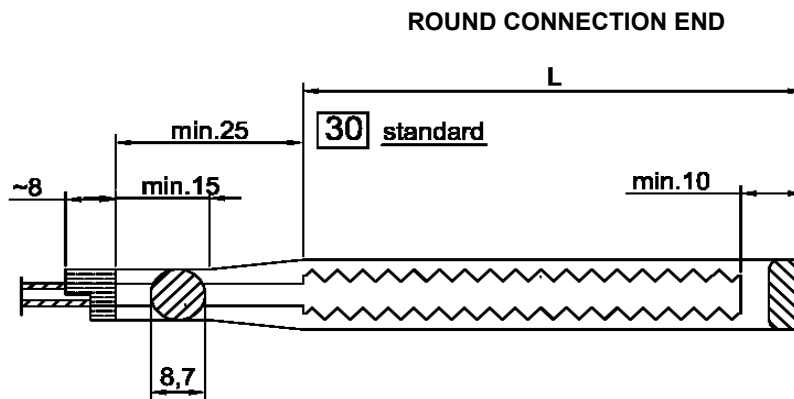
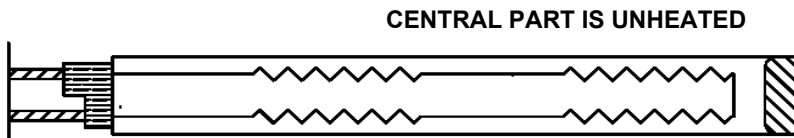
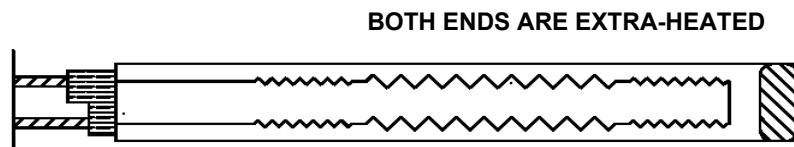
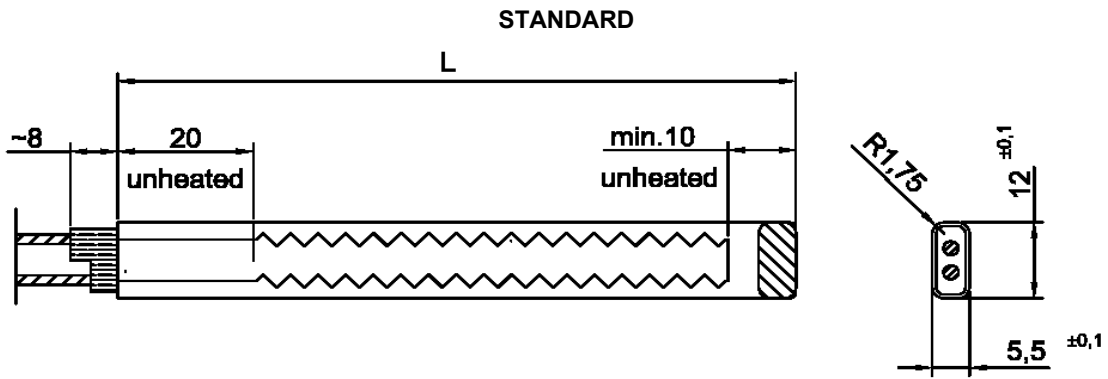
**FLEXIBLE METAL CONDUIT**



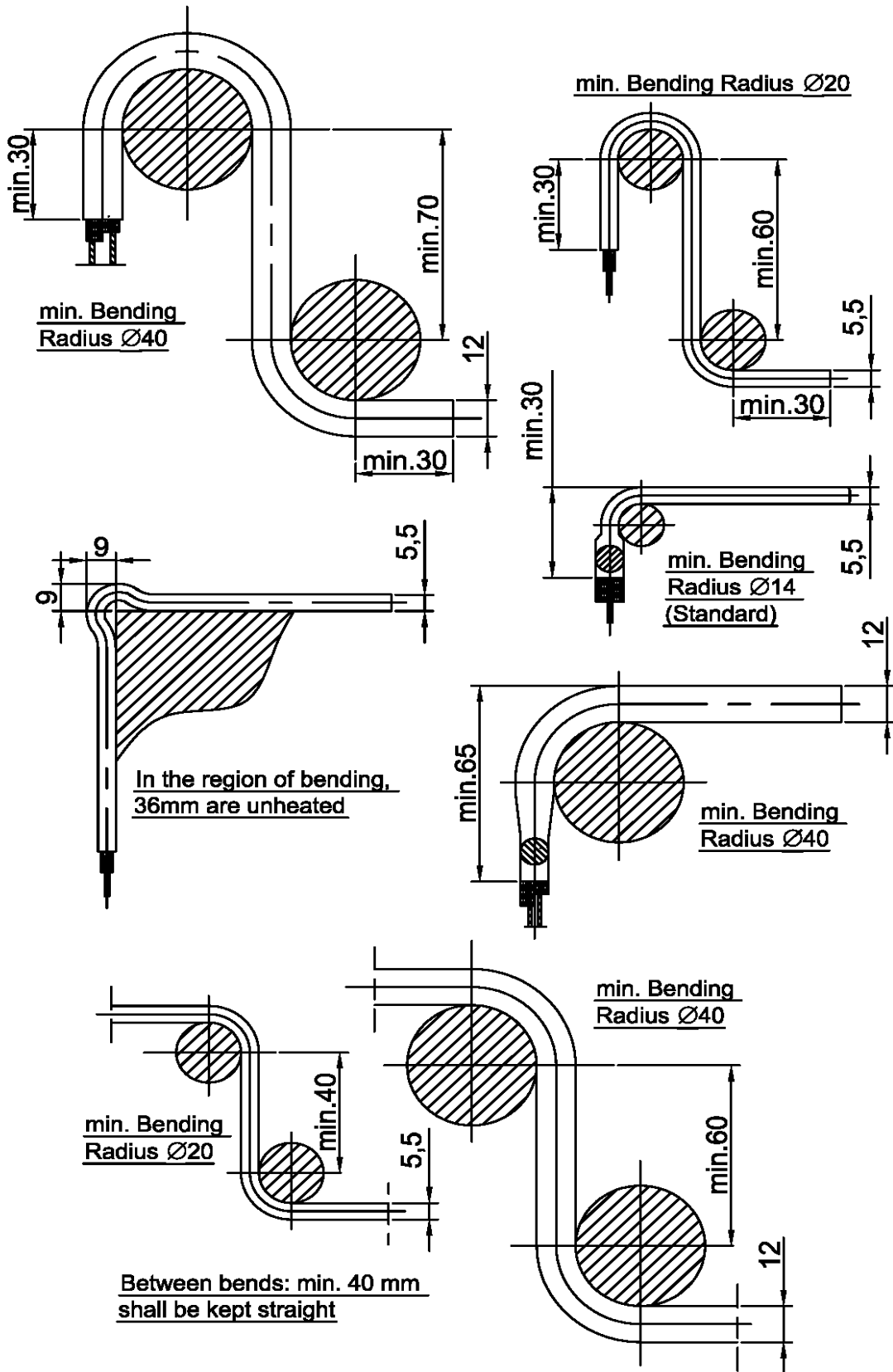
**THREADED NIPPLE**

M12x1 (EN-CN12) SW17  
Material: 1.4305 (AISI 303)

# Heating Options

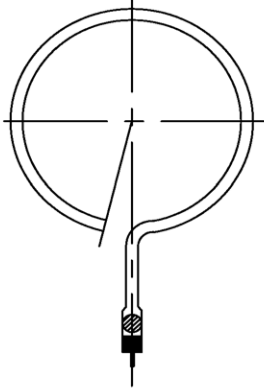


Bending in Shapes

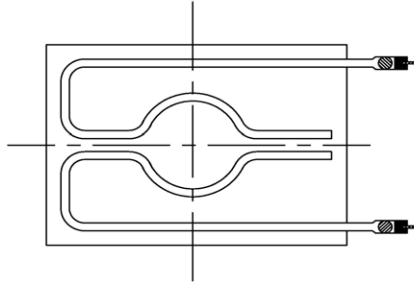


## Some Applications & Shapes

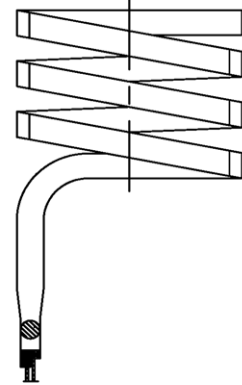
Ring shaped, either flat or upright bended



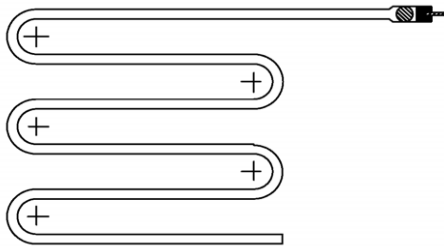
Press tool (groove mounting), either flat or upright bended



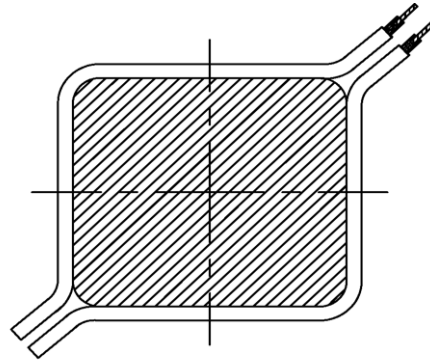
Helical, bended on flat side



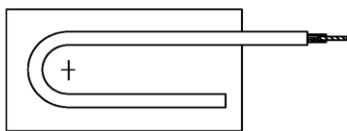
Greek key pattern, either flat or upright bended



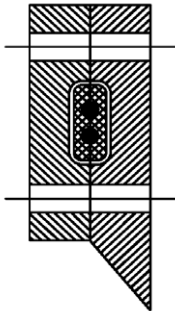
Gripping heater, bended on flat side



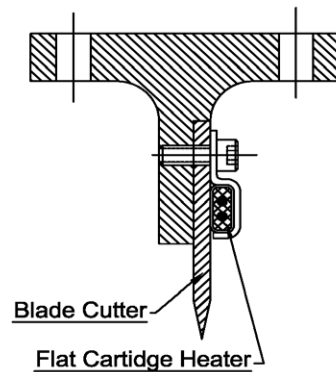
U-shaped, either flat or upright bended



Example of heating a punching blade



Example of heating a punching blade





As a dynamic and innovative Group, we pursue a policy of continuous product development and improvement. Our companies, therefore, reserve the right to amend the specifications without giving prior notice. Descriptions and data in this brochure are correct at the time of the issue but are subject to alteration. Details of any change are available on request.

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