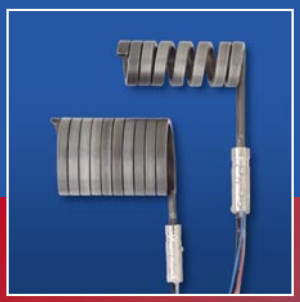
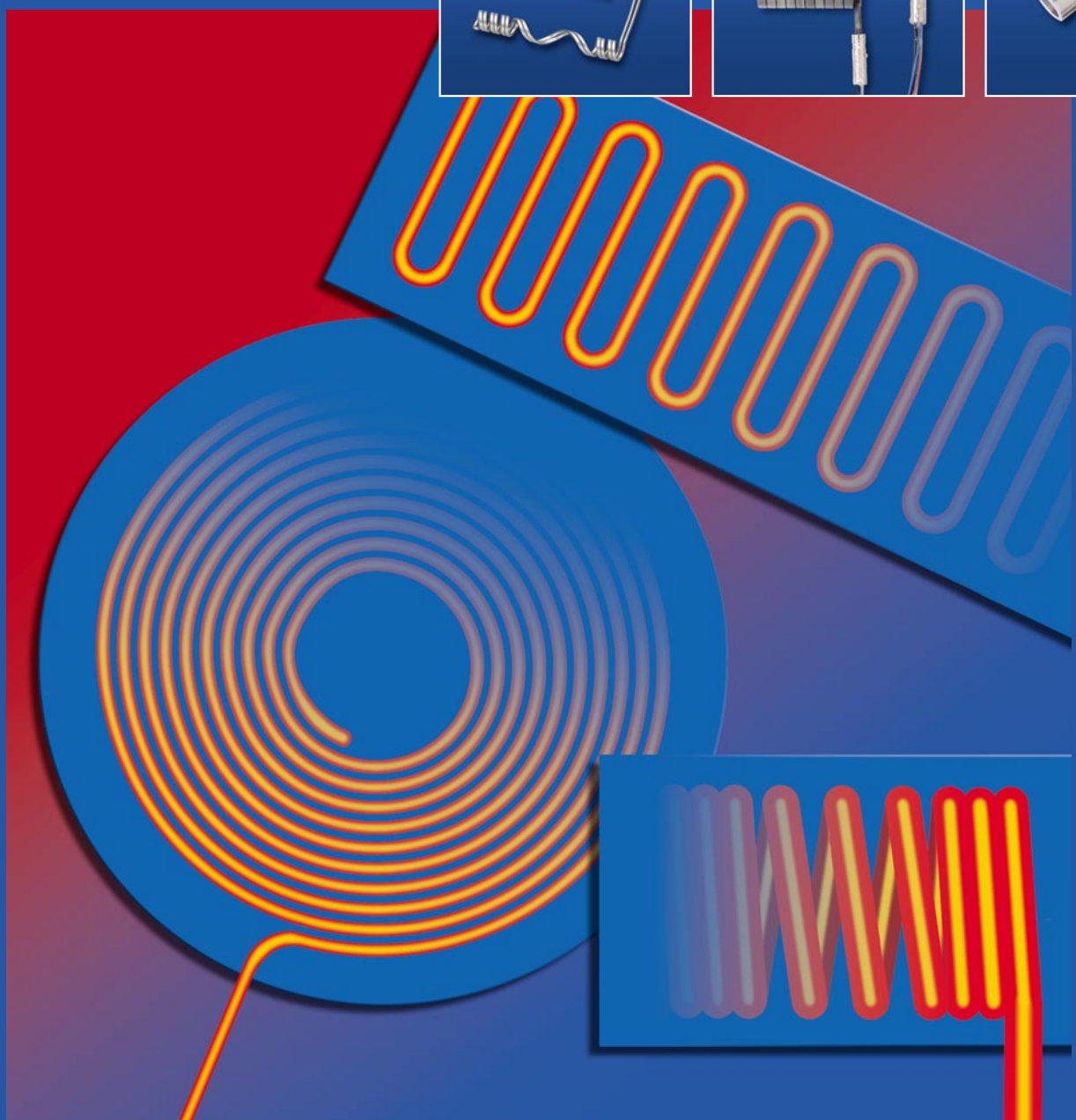
hotspring®

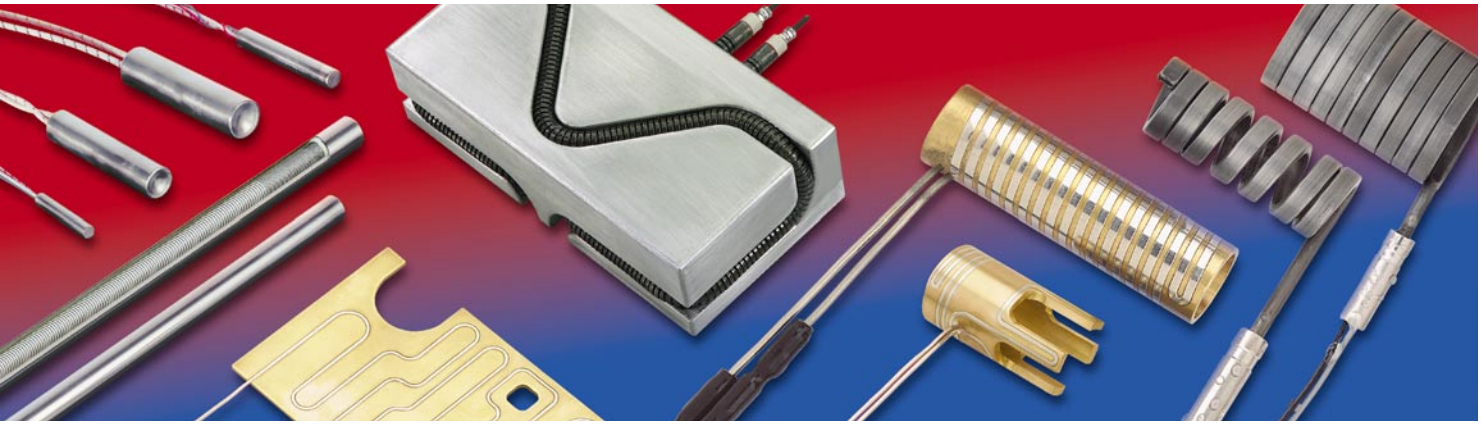
Coil Heaters (type WRP)

One step ahead,

safely!







Since the foundation in 1973 hotset has developed and produced heating elements and since then they have been on an expansion course. Oriented by customer demands hotset solves heating tasks for industrial applications.

With production plants in Lüdenscheid and on Malta hotset offers high production knowledge and innovation force for the future.

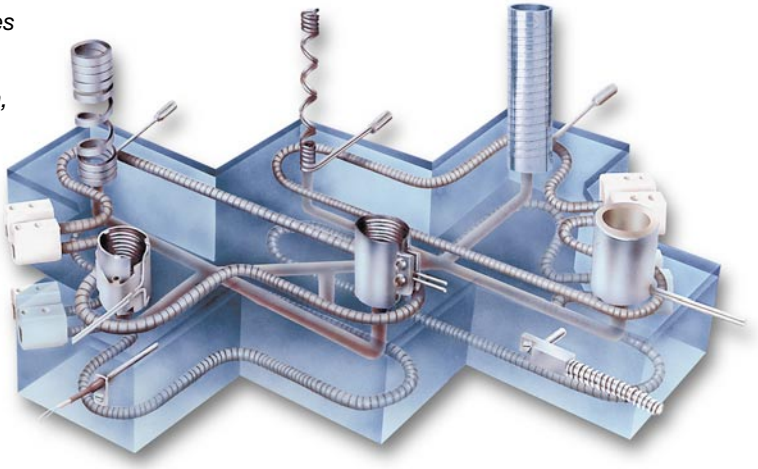
Starting with a large stock range via simple standard heating elements up to customer-specific developments: no matter whether hotrod® cartridge heaters, hotspring® coil heaters or innovative products such as hotflex® or hotslot® as well as excellent customer service, hotset offers the right solution – also customer-specific!

Thus, hotset can prove its high level of innovations and can offer heating elements which are of high quality, fully developed and are suitable for different applications.

In Germany and in more than 30 countries worldwide hotset is for its customers "always one step ahead".

Motivated and qualified employees take care that hotset stands for proximity to customers, innovation, competence and reliability also in future.

You will see and experience it – promised!



Content

hotspring® Coil Heaters (type WRP)

With this brochure hotset presents a wide product spectrum of coil heaters:

- Starting with hotspring®/Micro up to hotspring®/Maxi with different lengths and diameters.
- E. g. hotspring® coil heaters casted in brass or with clamping mechanism and screwing as heating elements for different applications.
- Heating systems such as the heated nozzle hotcone® (type BMD).
- Special product such as hotslot®.
- As well as a wide spectrum of applications.

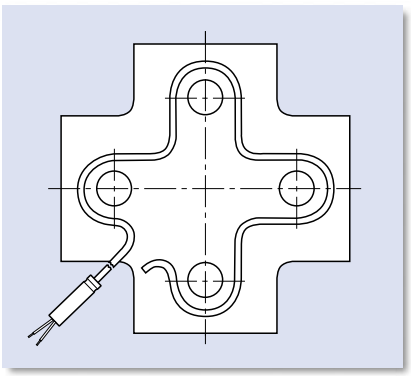
Already in 1980 hotset had been one idea ahead when they presented the first round hotspring® coil heater (type WRP Ø 3.3). Since then further innovations have been made: hotspring®/Mini, flat and square coil heater (hotspring®/F resp. hotspring®/Q), hotspring®/Maxi as well as hotspring®/Micro. Special product variants are consequently developed according to the requirements of the user.

The heated machine nozzle hotcone® (type BMD) is of high potential for the plastic processing industry. This product is compact, sealed systems based on the heating with a hotspring®/Maxi with corresponding power distribution.

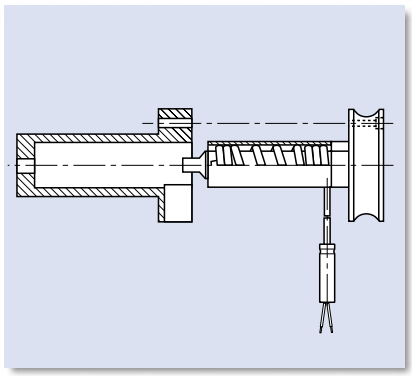
hotspring® coil heaters inserted in hotslot® ensure a precise heating with any power distribution possible. This innovation as well as the humidity-resistant coil heaters according to IP 65 (hotspring® Ø 3.3, hotspring®/F 2.2 x 4.2, hotspring®/F 1.8 x 3.2, hotspring®/Q 3.0 x 3.0, hotspring® Ø 4.0) emphasize the consistant alignment to new challenges.

hotspring® coil heaters (type WRP): One step ahead, safely!

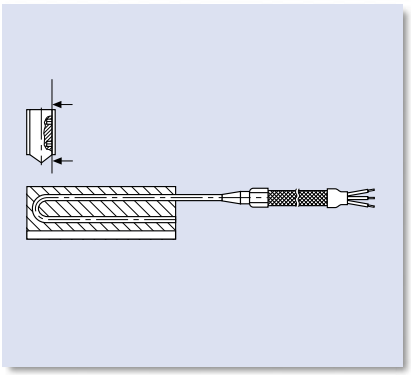
Application examples for the use of hotspring® Coil Heaters



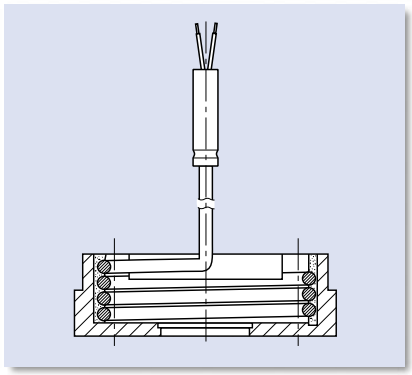
Mass channel Technology
Heating of manifolds



Mass channel Technology
Heating of mass channel nozzles

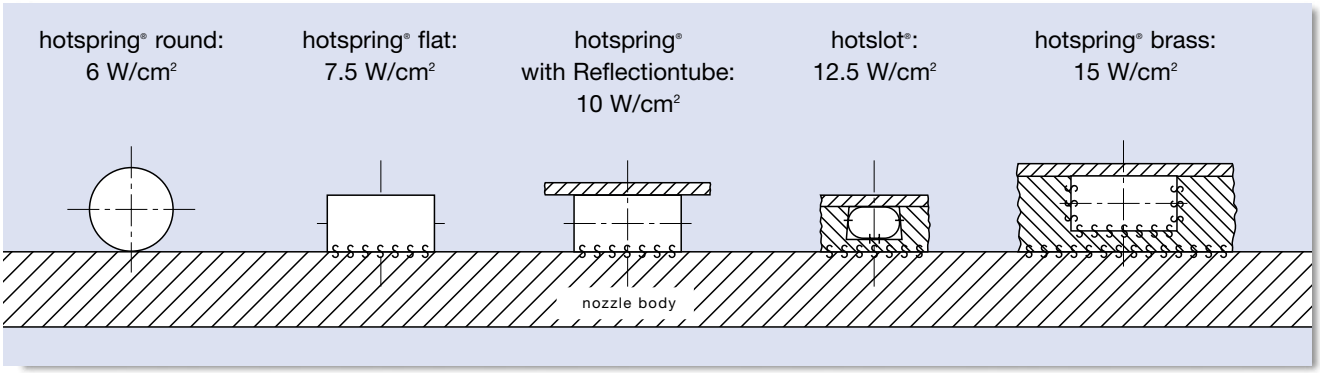


Packaging Industry
Heating of welding bars



Packaging Industry
Heating of sealed heads

Sheath-surface load



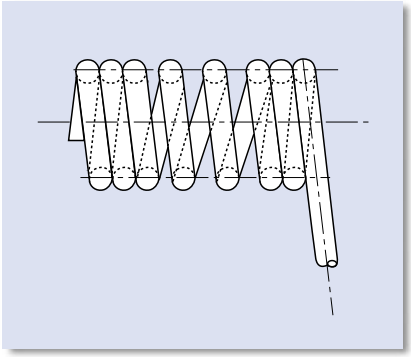
The above mentioned standard values for maximun sheath-surface load of the different hotspring®-variants depends on the operating temperature as well as the heat dissipation.

Possibilities of coiling

Coiling scheme
for coiled heaters

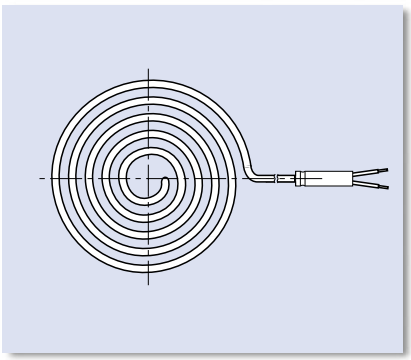
Cylindrical standard coiling with following options:

- coiled tight
- coiled with defined pitch (up to max. 50 mm)
- coiled with power distribution

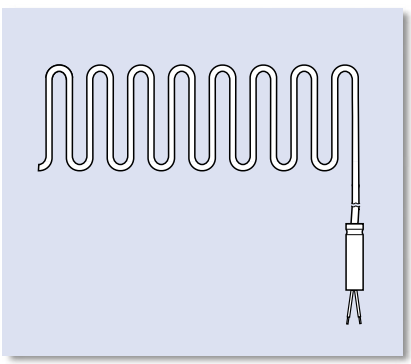


scheme for coiled heaters

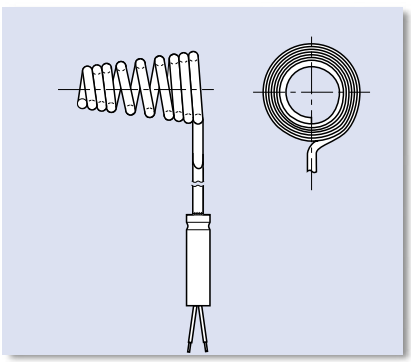
Alternatively, other geometries can be coiled:



flat coiling

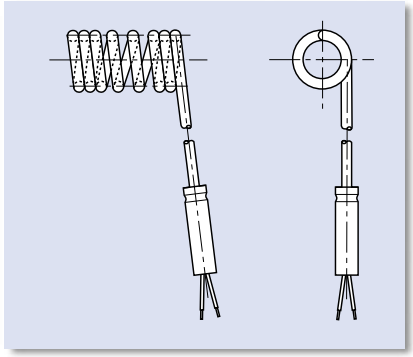


meander coiling

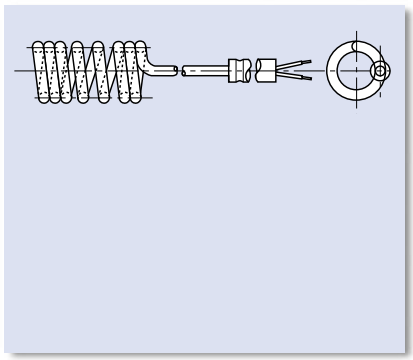


conical coiling

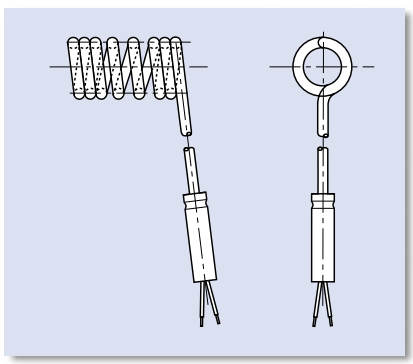
Exits



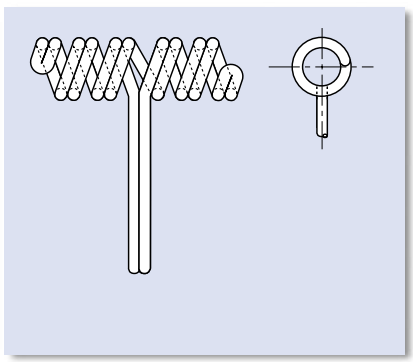
tangential exit



axial exit



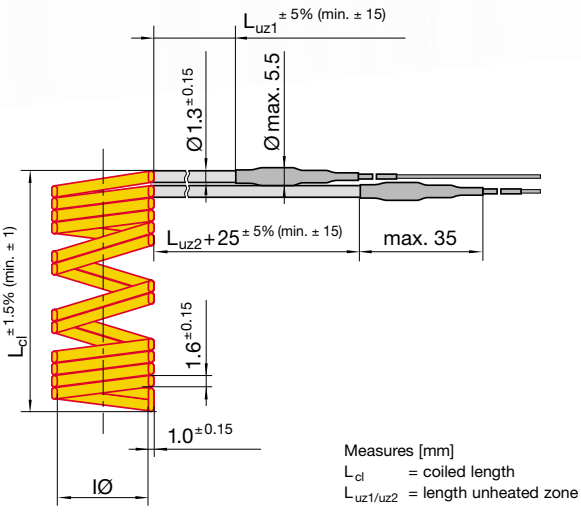
radial exit



exit in the mid (for Micro and Mini)

hotspring® Coil Heater (type WRP) Micro / F / 1.0 x 1.6

also as hotspring®/Micro Ø 1.3 (on request)



Measures [mm]
L_{cl} = coiled length
$L_{uz1/uz2}$ = length unheated zone

Technical Data

- hotspring® coil heater with flat cross-section 1.0 x 1.6 mm (deliverable only in coiled condition)
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ bei 500 V-DC
- Leakage current (cold): ≤ 0.5 mA bei 253 V-AC
- Exit axial, radial, tangential or in the mid, see page 6
- max. total length straight: 3000 mm
- min. length of unheated zone L_{uz}: 25 mm plus connection head
- Length tolerance straight: ± 5%
- Inner diameter tolerance without reflection tube: up to IØ 12 mm -0.05/-0.20 up to IØ 30 mm -0.10/-0.30 with reflection tube: +0.05/+0.15
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal): 3 mm (heated and unheated zone)
- individual connection heads, max. length: 35 mm
- connection version: 1000 mm PTFE insulated Cu-nickel plated leads, multistranded (Standard)
- for connection-temperatures max. 260 °C
- deliverable with external thermocouple (e. g. coiled) (IEC 60584)
- deliverable with reflection tube

Other dimensions and product varieties on request.

We reserve the right to change technical details.

Please note the installation and storage instructions.

Approximate formula
for calculation the stretched heated length of coiled heaters [mm]

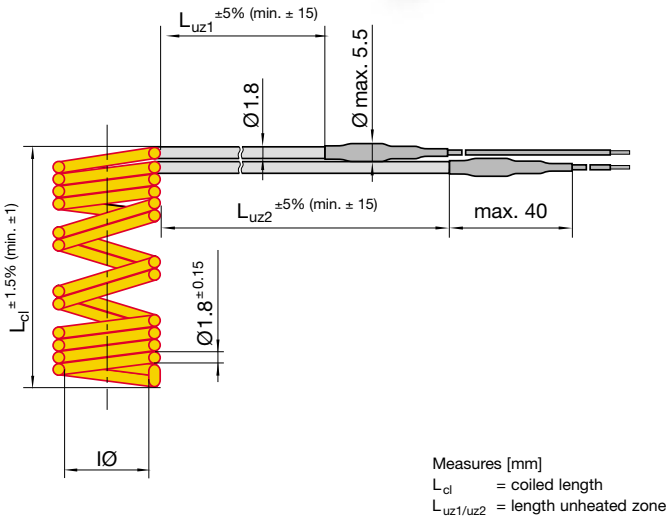
$$(I\varnothing + 1.3) \cdot \pi \cdot \text{number of windings} \cdot 2 = \text{heated length}_{straight}$$

Order Details

hotspring®/Micro/F/1.0 x 1.6

Application : .....
+ Inner-Ø: .....
+ Coiled length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Reflection tube: .....
+ Length of unheated zone: .....
+ Quantity: .....

hotspring® Coil Heater (type WRP) Mini Ø 1.8



Measures [mm]
L_{cl} = coiled length
$L_{uz1/uz2}$ = length unheated zone

Technical data

- hotspring® coil heater with round cross-section Ø 1.8 mm
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Exit axial, radial, tangential or in the mid, see page 6
- max. total length straight: 3000 mm
- min. length of unheated zone L_{uz}: 25 mm plus connection head
- Length tolerance straight: ± 5%
- Inner diameter tolerance without reflection tube: up to IØ 12 mm -0.05/-0.20 up to IØ 30 mm -0.10/-0.30 with reflection tube: +0.05/+0.15
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal): 3 mm (heated and unheated zone)
- individual connection heads or common connection head
- connection version see page 13, Standard connection length 1000 mm
- for connection-temperatures max. 260 °C
- deliverable with external thermocouple (e. g. coiled-in) (IEC 60584)
- deliverable with clamping element or collar

Other dimensions and product varieties on request.

We reserve the right to change technical details.

Please note the installation and storage instructions

Approximate formula
for calculation the stretched heated length of coiled heaters [mm]

$$(I\text{Ø} + 1.8) \cdot \pi \cdot \text{number of windings} \cdot 2 = \text{heated length}_{straight}$$

Order Details

hotspring®/Mini/Ø 1.8

Application : .....
+ Inner-Ø: .....
+ Coiled length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Length of unheated zone: .....
+ Clamping element: .....
+ Collar: .....
+ Quantity: .....

hotspring® Coil Heater (type WRP) Mini/F/ 1.3 x 2.3

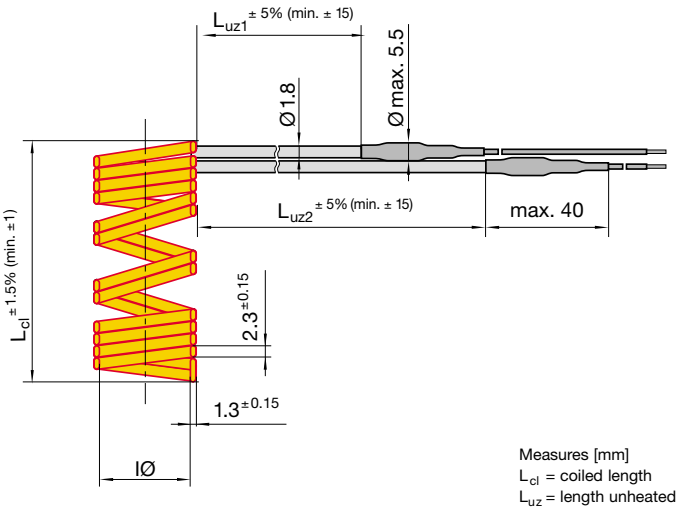
Technical data

- hotspring® coil heater with flat cross-section 1.3 x 2.3 mm (deliverable only in coiled condition)
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< auf Anfrage)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Exit axial, radial, tangential or in the mid, see page 6
- max. total length straight: 3000 mm
- min. length of unheated zone L_{uz}: 25 mm plus connection head
- Length tolerance straight: ± 5%
- Inner diameter tolerance without reflection tube: up to IØ 12 mm -0.05/-0.20 up to IØ 30 mm -0.10/-0.30 with reflection tube: +0.05/+0.15
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal): 3 mm (heated and unheated zone)
- individual connection heads or common connection head
- Connection options see page 13
- for connection-temperatures max. 260 °C
- deliverable with external thermocouple (e. g. coiled-in) (IEC 60584)
- deliverable with reflection tube
- deliverable with clamping element or collar

Other dimensions and product varieties on request.

We reserve the right to change technical details.

Please note the installation and storage instructions.



Measures [mm]
L_{cl} = coiled length
L_{uz} = length unheated zone

Approximate formula

for calculation the stretched heated length of coiled heaters [mm]

(IØ + 1.8) · π · number of windings · 2 = heated length$_{straight}$

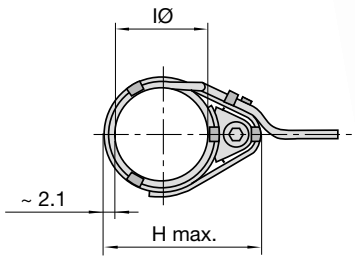
Order Details

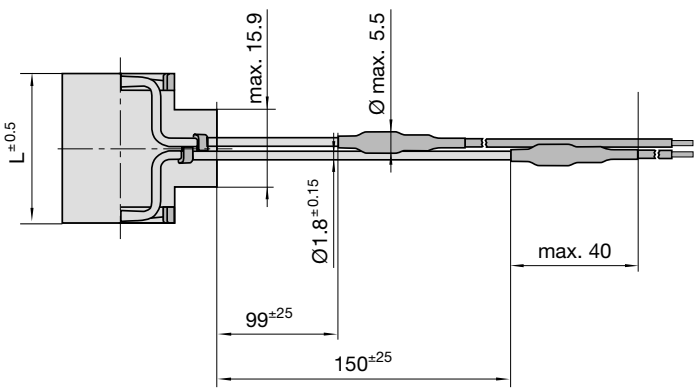
hotspring®/Mini/F/1.3 x 2.3

Application : .....
+ Inner-Ø: .....
+ Coiled length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Reflection tube: .....
+ Length of unheated zone: .....
+ Clamping element: .....
+ Collar: .....
+ Quantity: .....

hotspring® Coil Heater (type WRP) Mini / F/1.3 x 2.3

with clamping band and axial screwing





Measures [mm]

Technical data

- hotspring® coil heater with flat cross-section 1.3 x 2.3 mm with clamping band and axial screwing
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 resp. 240 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Inner diameter tolerance clampable on indicated nozzle diameter
- minimum bending radius (internal): 3 mm
- separated connection heads
- connection versions see page 13, Standard length 1830 mm
- for connection-temperatures max. 260 °C
- Variant 1: L = 30.5 mm/IØ = 19.05 mm
  length of unheated zone 99/150 mm
  H max. = 32.3 mm
  wattage: 149 W or 268 W (Standard) at 240 V
- Variant 2: L = 30.5 mm/IØ = 22.2 mm
  length of unheated zone 99/150 mm
  H max. = 36.4 mm/IØ = 22.2 mm
  wattage: 250 W at 230 V (Standard)

Stock dimensions can be found in the stock range brochure.

We reserve the right to change technical details.

Please note the installation and storage instructions.

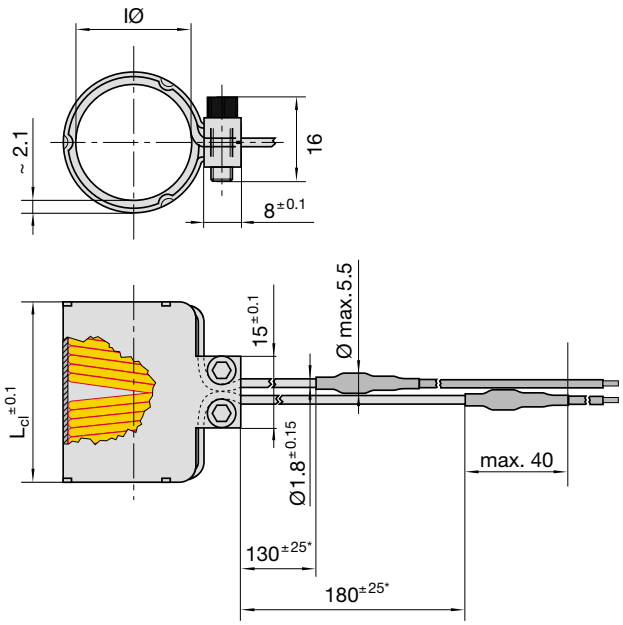
Order Details

hotspring®/Mini/F/1.3 x 2.3 with axial clamping band

Application : .....
+ for nozzle-/clamping band-Ø:
  ☐ Variant 1
  ☐ Variant 2
+ Wattage: .....
+ Voltage: .....
+ Length of unheated zone: .....
+ Quantity: .....

hotspring®
Coil Heater (type WRP)
Mini / F/1.3 x 2.3

with clamping band and tangential screwing



Measures [mm]
L_{cl} = Coiled length

* other lengths of unheated zones
see Technical Data

Technical data

- hotspring® coil heater with flat cross-section 1.3 x 2.3 mm with collar and tangential screwing
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Wattage:
  Variant 1: 125 W
  Variant 2: 250 W
  Variant 3: 250 W
- Wattage tolerance (cold):
  ± 10% (< on request)
- High voltage strength (cold):
  min. 800 V-AC
- Insulation resistance (cold):
  ≥ 5 MΩ at 500 V-DC
- Leakage current (cold):
  ≤ 0.5 mA at 253 V-AC
- Length unheated zones 130/180 mm (Standard)
- Inner diameter tolerance clampable on indicated nozzle diameter
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal):
  3 mm
- individual connection heads
- Connection versions see page 13, Standard length 1000 mm
- for connection-temperatures max. 260 °C
- Variant 1: L = $30.5^{\pm 0.1}$ mm/IØ = 19.05 mm
  Variant 2: L = $25.4^{\pm 0.1}$ mm/IØ = 19.05 mm
  Variant 3: L = $30.5^{\pm 0.1}$ mm/IØ = 22.20 mm

Stock dimensions can be found in the stock range brochure.

We reserve the right to change technical details.

Please note the installation and storage instructions.

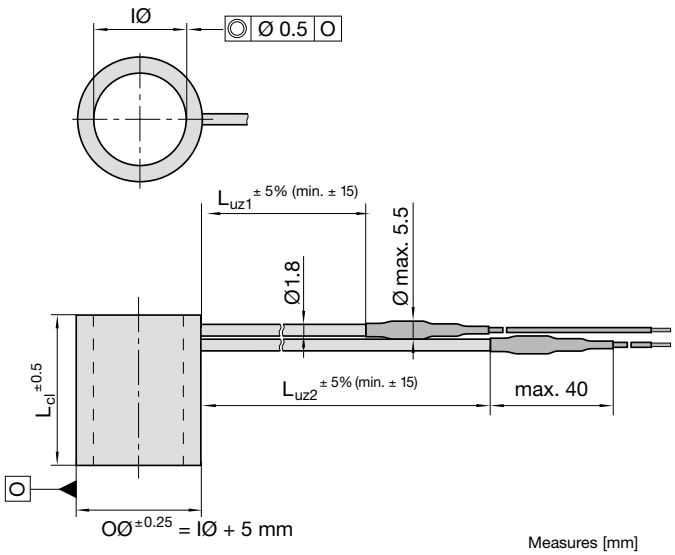
Order Details

hotspring®/Mini/F/1.3 x 2.3
with tangential screwing

Application : .....
\+ for nozzle-/clamping band-Ø:
☐ Variant 1
☐ Variant 2
☐ Variant 3
\+ Wattage: .....
\+ Voltage: .....
\+ Length of unheated zone: .....
\+ Quantity: .....

hotspring®
Coil Heater (type WRP)
Mini / M

casted in brass



Measures [mm]
L_{cl} = coiled length
L_{uz} = length unheated zone

Technical data

- hotspring® coil heater casted in brass with outer sheath of stainless steel
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Temperature at brass inner sheath: max. 650 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength: (cold) min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Exit axial or radial, see page 6
- min. length of unheated zone L_{uz}: 25 mm
- Inner diameter tolerance Standard + 0.05 (H7 on request)
- Outer-Ø = Inner-Ø + 5 mm
- minimum outer diameter tolerance: ± 0.25 mm
- Coaxiality inner-Ø to outer-Ø: ◎ Ø 0.5
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal): 3 mm (unheated zone)
- Connection versions see page 13
- for connection-temperatures max. 260 °C
- with or without reinforcement tube along the unheated zone against distortion or breakage, for axial exit not possible

Other dimensions and product varieties on request.

We reserve the right to change technical details.

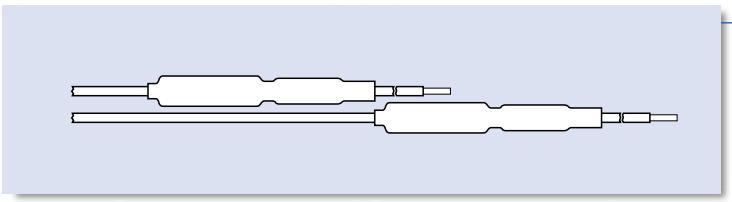
Please note the installation and storage instructions.

Order Details

hotspring®/Mini/M

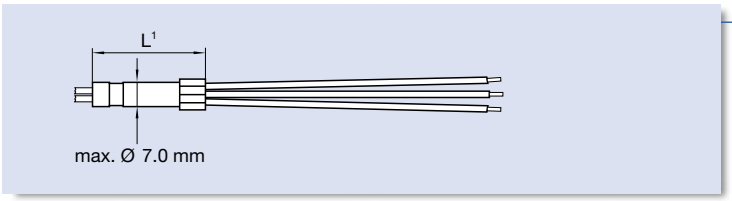
Application : .....
+ Inner-Ø: .....
+ Tolerance Inner-Ø: .....
+ Length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Length of unheated zone: .....
+ Protection tube: .....
+ Quantity: .....

Connection options hotspring®/Micro and hotspring®/Mini



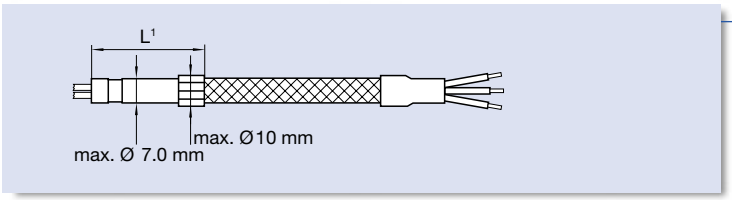
Type Micro/Mini individual heads

- PTFE[2] insulated Cu-nickel plated leads, multistranded



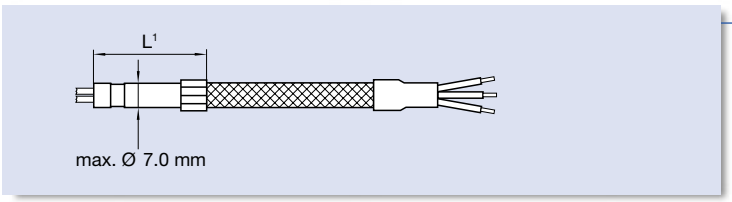
Type Mini N

- common head
- PTFE[2] insulated Cu-nickel plated leads, multistranded (Standard)[3]
- with ground wire



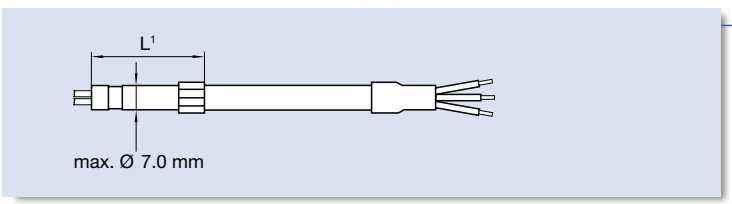
Type Mini NG

- common head
- PTFE[2] insulated Cu-nickel plated leads, multistranded (Standard)[3] with glass silk insulated protective sleeving
- with ground wire



Type Mini ND

- common head
- PTFE[2] insulated Cu-nickel plated leads, multistranded (Standard)[3] with braided metal sleeving
- with ground wire



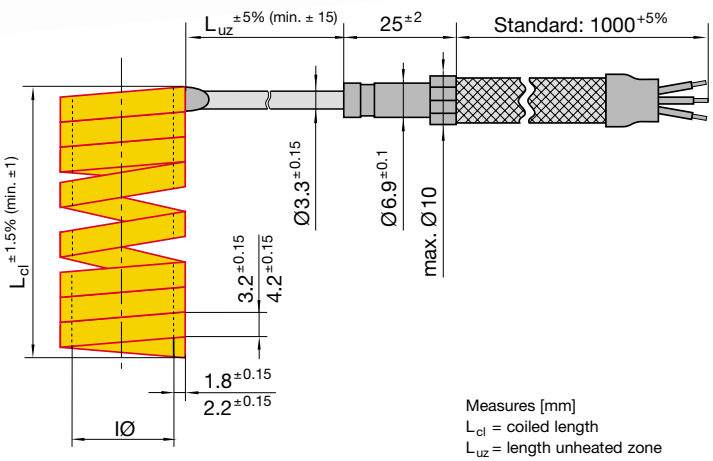
Type Mini NT

- common head
- PTFE[2] insulated Cu-nickel plated leads, multistranded (Standard)[3] with PTFE-sleeving
- with ground wire

[1] head length L = 25 mm (Standard)
[2] maximum temperature at connection sector: 260 °C
[3] other types on request

hotspring® Coil Heater (type WRP) F/1.8 x 3.2

IP 65 protected against water jets



Measures [mm]
L_{cl} = coiled length
L_{uz} = length unheated zone

Approximate formula
for calculation the stretched heated length of coiled heaters [mm]

(IØ + 1.8) · π · number of windings = heated length$_{straight}$

Technical data

- humidity-resistant hotspring® coil heater with flat cross-section 1.8 x 3.2 mm
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Exit axial, radial or tangential, see page 6
- max. total length straight: 3000 mm
- min. length of unheated zone L_{uz}:
  25 mm plus connection head 25 mm
- Length tolerance
  heated zone: ± 1%
  unheated zone: ± 5%
- Inner diameter tolerance
  without reflection tube:
  up to IØ 12 mm -0.05/-0.20
  up to IØ 30 mm -0.10/-0.30
  up to IØ 50 mm -0.20/-0.40
  > IØ 50 mm on request
  with reflection tube: +0.05/+0.15
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal):
  heated zone: 4 mm
  unheated zone: 4 mm
- Connection versions see page 20
- for connection-temperatures max. 260 °C
- deliverable with or without integrated thermocouple Fe-CuNi (type J, Standard) or NiCr-Ni (type K) (IEC 60584) (ungrounded)
- deliverable with reflection tube
- can be delivered with clamping band and clamping element
- optional IP 68 water-immersion-protected with water proof connection zone, for connection-temperatures max. 300 °C, connection leads PTFE insulated Ni-leads on request

Other dimensions and product varieties on request.
We reserve the right to change technical details.
Please note the installation and storage instructions.

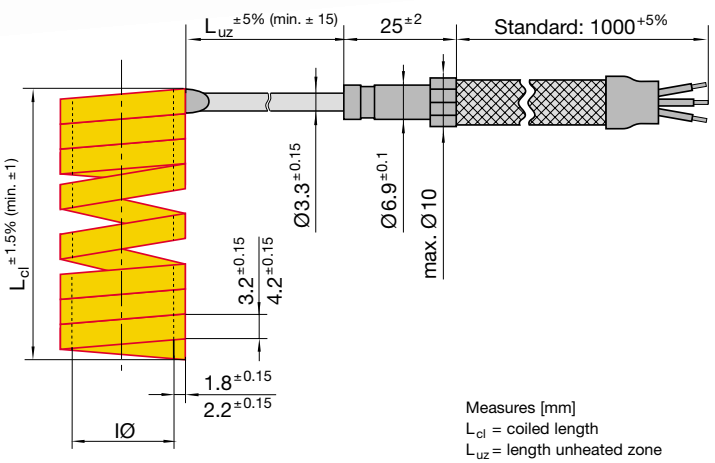
Order Details

hotspring®/F/1.8 x 3.2

Application : .....
+ Inner-Ø: .....
+ Coiled length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Reflection tube: .....
+ Length of unheated zone: .....
+ Clamping band: .....
+ Clamping element: .....
+ IP: .....
+ Quantity: .....

hotspring® Coil Heater (type WRP) F/2.2 x 4.2

IP 65 protected against water jets



Measures [mm]
L_{cl} = coiled length
L_{uz} = length unheated zone

Approximate formula

for calculation the stretched heated length of coiled heaters [mm]

(IØ + 2.2) · π · number of windings = heated length$_{straight}$

Technical data

- humidity-resistant hotspring® coil heater with flat cross-section 2.2 x 4.2 mm
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Exit axial, radial or tangential, see page 6
- max. total length straight: 3000 mm
- min. length of unheated zone L_{uz}: 25 mm plus connection head 25 mm
- Length tolerance heated zone: ± 1% unheated zone: ± 5%
- Inner diameter tolerance without reflection tube: up to IØ 12 mm -0.05/-0.20 up to IØ 30 mm -0.10/-0.30 up to IØ 50 mm -0.20/-0.40 > IØ 50 mm on request with reflection tube: +0.05/+0.15
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal): heated zone: 4 mm unheated zone: 4 mm
- Connection versions see page 20
- for connection-temperatures max. 260 °C
- deliverable with or without integrated thermocouple Fe-CuNi (type J, Standard) or NiCr-Ni (type K) (IEC 60584) (ungrounded (standard) or grounded)
- deliverable with reflection tube
- can be delivered with clamping band and clamping element
- optional IP 68 water-immersion-protected with water proof connection zone, for connection-temperatures max. 300 °C, connection leads PTFE insulated Ni-leads on request

Other dimensions and product varieties on request.
We reserve the right to change technical details.
Please note the installation and storage instructions.

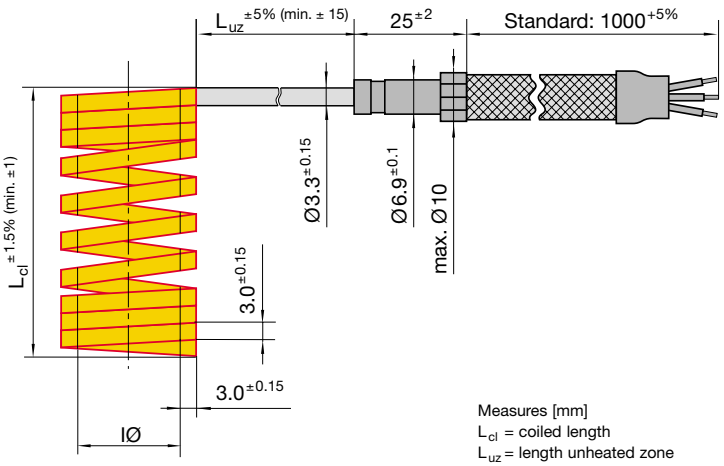
Order Details

hotspring®/F/2.2 x 4.2

Application : .....
+ Inner-Ø: .....
+ Coiled length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Reflection tube: .....
+ Length of unheated zone: .....
+ Clamping band: .....
+ Clamping element: .....
+ IP: .....
+ Quantity: .....

hotspring® Coil Heater (type WRP) Q/3.0 x 3.0

IP 65 protected against water jets



Measures [mm]
L_{cl} = coiled length
L_{uz} = length unheated zone

Approximate formula
for calculation the stretched heated length of coiled heaters [mm]

(IØ + 3.0) · π · number of windings = heated length$_{straight}$

Technical data

- humidity-resistant hotspring® coil heater with square cross-section 3.0 x 3.0 mm
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Exit axial, radial or tangential, see page 6
- max. total length straight: 3000 mm
- min. length of unheated zone L_{uz}: 25 mm plus connection head 25 mm
- length tolerance: heated zone: ± 1%
  unheated zone: ± 5%
- Inner diameter tolerances
  without reflection tube:
  up to IØ 12 mm -0.05/-0.20
  up to IØ 30 mm -0.10/-0.30
  up to IØ 50 mm -0.20/-0.40
  > IØ 50 mm on request
  with reflection tube: +0.05/+0.15
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal):
  heated zone: 4 mm
  unheated zone: 4 mm
- Connection versions see page 20
- for connection-temperatures max. 260 °C
- deliverable with or without integrated thermocouple Fe-CuNi (type J, Standard) or NiCr-Ni (type K) (IEC 60584) (ungrounded (standard) or grounded)
- deliverable with reflection tube
- deliverable with clamping band or clamping element
- optional IP 68 water-immersion-protected with water proof connection zone, for connection-temperatures max. 300 °C, connection leads PTFE insulated Ni-leads on request

Other dimensions and product varieties on request.
We reserve the right to change technical details.
Please note the installation and storage instructions.

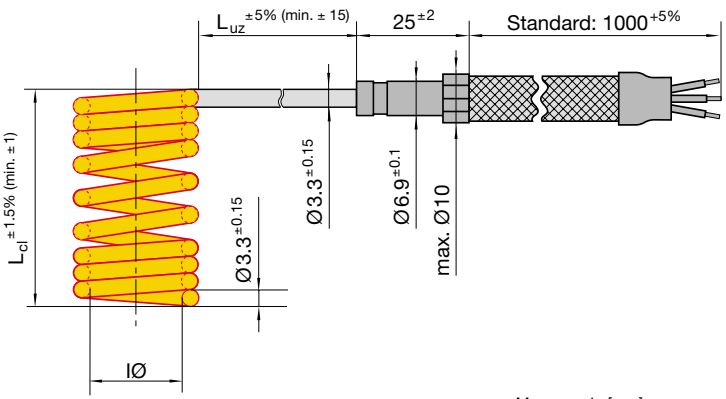
Order Details

hotspring®/Q/3.0 x 3.0

Application : .....
+ Inner-Ø: .....
+ Coiled length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Reflection tube: .....
+ Length of unheated zone: .....
+ Clamping band: .....
+ Clamping element: .....
+ IP: .....
+ Quantity: .....

hotspring® Coil Heater (type WRP) Ø 3.3

IP 65 protected against water jets



Measures in [mm]
L_{cl} = coiled length
L_{uz} = length unheated zone

Approximate formula
for calculation the stretched heated length of coiled heaters [mm]

$$(I\varnothing + 3.3) \cdot \pi \cdot \text{number of windings} = \text{heated length}_{straight}$$

Technical data

- humidity-resistant hotspring® coil heater with round cross-section Ø 3.3 mm
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ ati 500 V-DC
- Leakage current (cold): ≤ 0.5 mA bei 253 V-AC
- Exit axial, radial or tangential, see page 6
- max. total length straight: 3000 mm
- min. length of unheated zone L_{uz}: 25 mm plus connection head 25 mm
- Length tolerance: heated zone: ± 2.5% unheated zone: ± 5%
- Inner diameter tolerances without reflection tube: up to IØ 12 mm -0.05/-0.20 up to IØ 30 mm -0.10/-0.30 up to IØ 50 mm -0.20/-0.40 > IØ 50 mm on request
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal): heated zone: 4 mm unheated zone: 4 mm
- Connection versions see page 20
- for connection-temperatures max. 260 °C
- deliverable with or without integrated thermocouple Fe-CuNi (type J, Standard) or NiCr-Ni (type K) (IEC 60584) (ungrounded (standard) or grounded)
- deliverable with clamping band or clamping element
- optional IP 68 water-immersion-protected with water proof connection zone, for connection-temperatures max. 300 °C, connection leads PTFE insulated Ni-leads on request

Other dimensions and product varieties on request.
We reserve the right to change technical details.
Please note the installation and storage instructions.

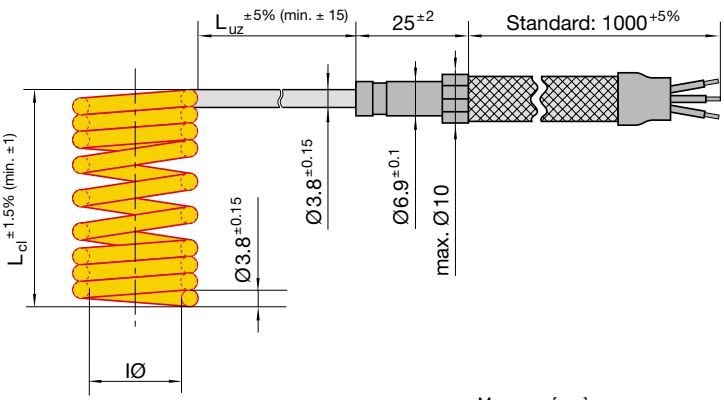
Order Details

hotspring® Ø 3.3

Application : .....
+ Inner-Ø: .....
+ Coiled length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Length of unheated zone: .....
+ Clamping band: .....
+ Clamping element: .....
+ IP: .....
+ Quantity: .....

hotspring® Coil Heater (type WRP) Ø 4.0

IP 65 protected against water jets



Measures [mm]
L_{cl} = coiled length
L_{uz} = length unheated zone

Approximate formula
for calculation the stretched heated length of coiled heaters [mm]

(IØ + 4.0) · π · number of windings = heated length$_{straight}$

Technical data

- hotspring® coil heater with round cross-section Ø 4.0 mm
- Sheath material: Stainless Steel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Exit axial, radial or tangential, see page 6
- max. total length straight: 3000 mm
- min. length of unheated zone L_{uz}: 25 mm plus connection head 25 mm
- Length tolerance: heated zone: ± 2.5% unheated zone: ± 5%
- Inner diameter tolerances without reflection tube:
  up to IØ 12 mm -0.05/-0.20
  up to IØ 30 mm -0.10/-0.30
  up to IØ 50 mm -0.20/-0.40
  > IØ 50 mm on request
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal): 5 mm
- Connection versions see page 20
- for connection-temperatures max. 260 °C
- deliverable with or without integrated thermocouple Fe-CuNi (type J, Standard) or NiCr-Ni (type K) (IEC 60584) (ungrounded (standard) or grounded)
- deliverable with clamping band or clamping element
- optional IP 68 water-immersion-protected with water proof connection zone, for connection-temperatures max. 300 °C, connection leads PTFE insulated Ni-leads on request

Other dimensions and product varieties on request.
We reserve the right to change technical details.
Please note the installation and storage instructions.

Order Details

hotspring® Ø 4.0

Application : .....
+ Inner-Ø: .....
+ Coiled length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Length of unheated zone: .....
+ Clamping band: .....
+ Clamping element: .....
+ IP: .....
+ Quantity: .....

hotspring® Coil Heater (type WRP)/M

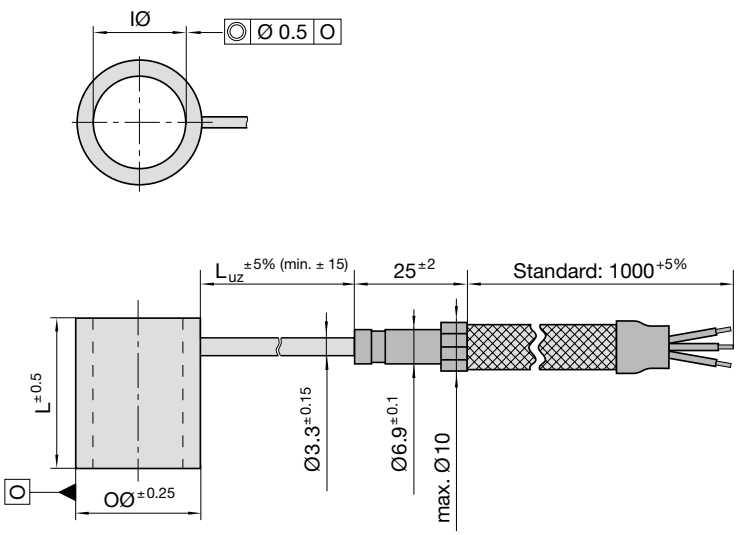
casted in brass

IP 65 protected against water jets

Technical data

- hotspring® coil heater casted in brass with outer sheath of stainless steel
- Sheath material: Stainless Steel or Nickel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Temperature at brass inner sheath: max. 650 °C
- Voltage: max. 250 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): min. 800 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Exit axial or radial, see page 6
- min. length of unheated zone L_{uz}: 25 mm plus connection head 25 mm
- Inner diameter tolerance: standard + 0.05 mm (H7 on request)
- minimum Outer-Ø = Inner-Ø + 9 up to 11 mm (depending on used coil heater)
- Outer diameter tolerance: ± 0.25 mm
- Coaxiality Inner-Ø to outer-Ø: ◎ Ø 0.5
- Sheath surface load according to operating temperature and heat dissipation, max. see page 5
- minimum bending radius (internal): 4 mm (unheated zone)
- Connection versions see page 20
- for connection-temperatures max. 260 °C
- deliverable with or without integrated thermocouple Fe-CuNi (type J, Standard) or NiCr-Ni (type K) (IEC 60584) (ungrounded (standard) or grounded)
- deliverable with reinforcement tube along unheated zone against distortion or breakage (on request)

Other dimensions and product varieties on request.
We reserve the right to change technical details.
Please note the installation and storage instructions.



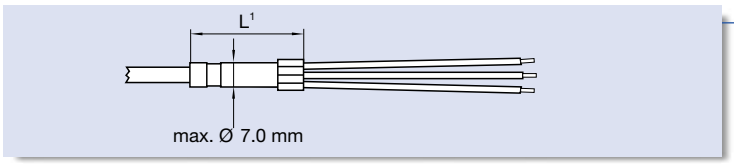
Measures [mm]
L = length
L_{uz} = length unheated zone

Order Details

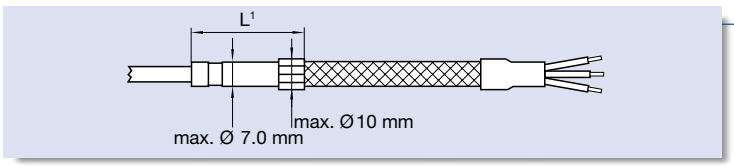
hotspring®/M

Application : .....
+ Inner-Ø: .....
+ Inner-Ø tolerance: .....
+ Length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Length of unheated zone: .....
+ Reinforcement tube: .....
+ Quantity: .....

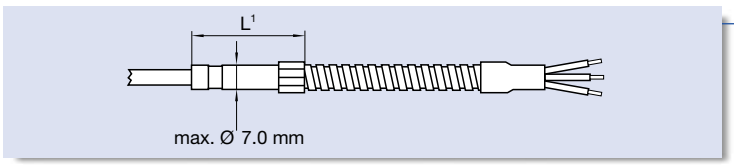
Connection versions
hotspring®/1.8 x 3.2/2.2 x 4.2/3 x 3/Ø 3.3/Ø 4.0



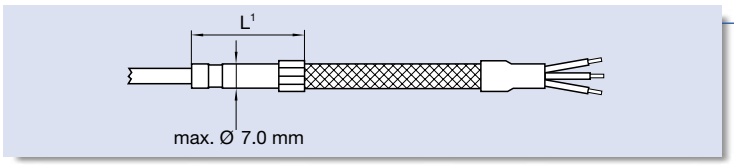
Type N
- PTFE insulated Cu-nickel plated leads, multistranded (Standard)[2]
- with ground wire



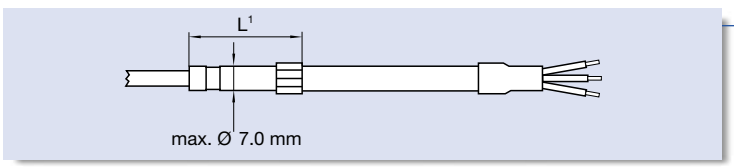
Type NG
- PTFE insulated Cu-nickel plated leads, multistranded (Standard)[2] with glass silk insulated protective sleeving
- with ground wire



Type NM
- PTFE insulated Cu-nickel plated leads, multistranded (Standard)[2] with flexible metal sleeving
- with ground wire

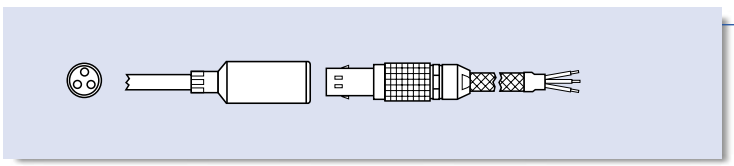


Type ND
- PTFE insulated Cu-nickel plated leads, multistranded (Standard)[2] with braided metal sleeving
- with ground wire

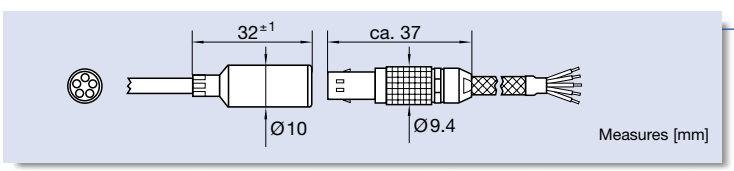


Type NT
- PTFE insulated Cu-nickel plated leads, multistranded (Standard)[2] with PTFE-sleeving
- with ground wire

[1] length of head L = 25 mm (Standard) or 20 mm
[2] other types on request

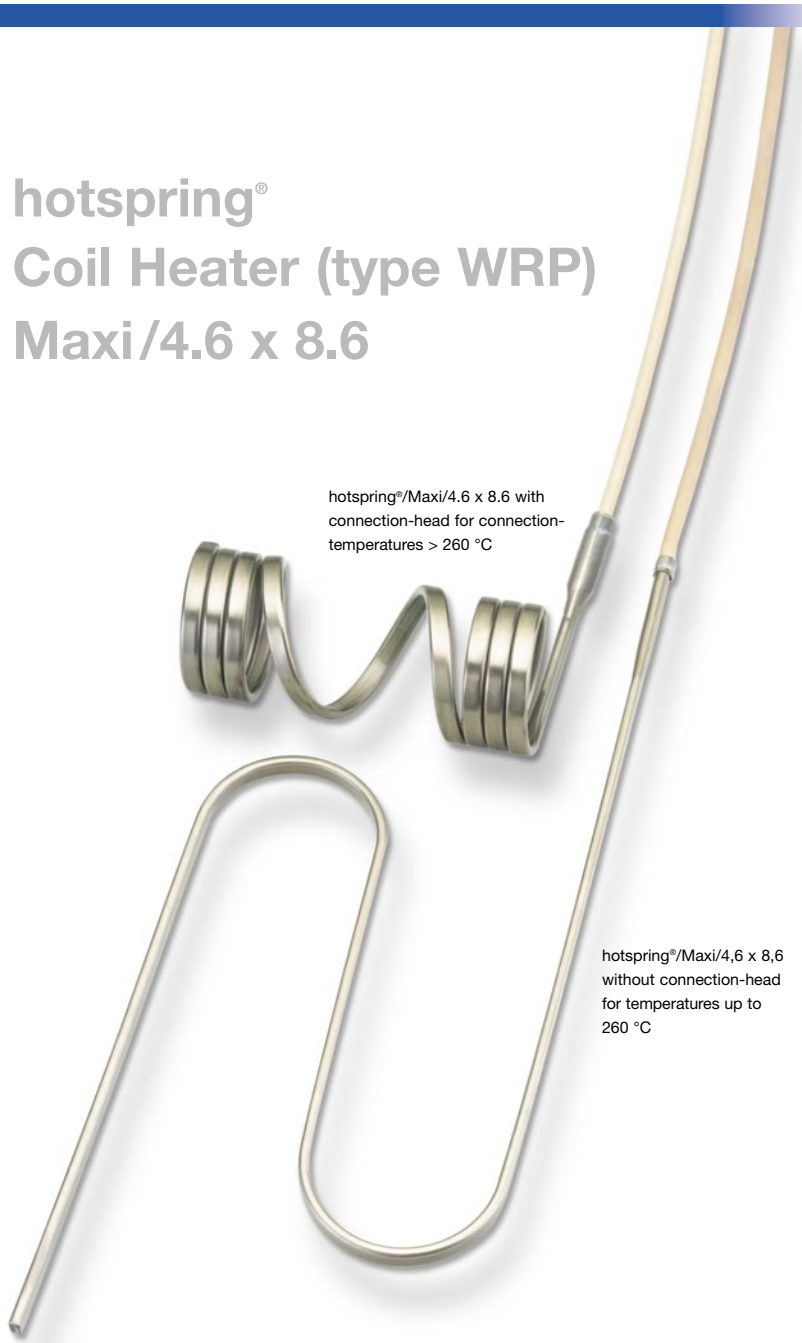


Plug connection, with 3 pins
- maximum current at 20 °C max. 8,0 A



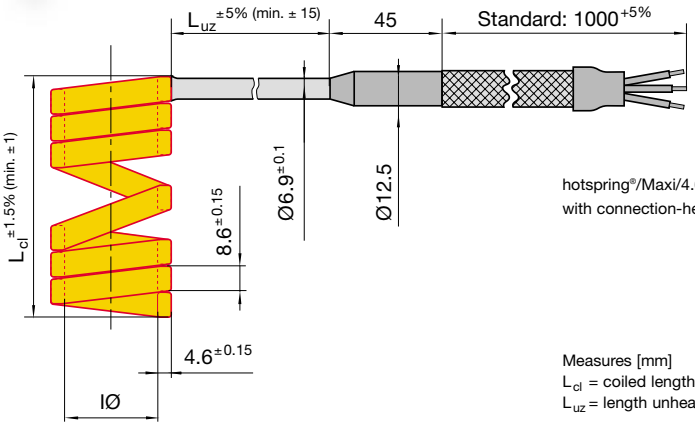
Plug connection, with 5 pins
- maximum current at 20 °C max. 6,5 A

hotspring®
Coil Heater (type WRP)
Maxi/4.6 x 8.6



hotspring®/Maxi/4.6 x 8.6 with connection-head for connection-temperatures > 260 °C

hotspring®/Maxi/4,6 x 8,6 without connection-head for temperatures up to 260 °C



hotspring®/Maxi/4.6 x 8.6 with connection-head

Measures [mm]
L_{cl} = coiled length
L_{uz} = length unheated zone

Approximate formula
for calculation the stretched heated length of coiled heaters [mm]

(IØ + 4.6) · π · number of windings = heated length$_{straight}$

Technical data

- hotspring® coil heater with flat cross-section 4.6 x 8.6 mm
- Sheath material: Stainless Steel
- Insulation sheath: high-compressed MgO
- Heating conductor compound: NiCr 8020
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 440 V, Standard: 230 V
- Power tolerance (cold): ± 10% (< on request)
- High voltage strength (cold): 1250 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA bei 253 V-AC
- Exit axial, radial or tangential, see page 6
- max. total length straight: 3000 mm
- with connection-head: min. length of unheated zone L_{uz}: 45 mm without connection-head: min. length of unheated zone: 45 mm, max. length of unheated zone: 65 mm
- Length tolerance heated zone: ± 1% unheated zone: ± 5%
- Inner diameter tolerances without reflection tube: up to IØ 30 mm -0.10/-0.30 up to IØ 50 mm -0.20/-0.40 > IØ 50 mm on request with reflection tube: +0.05/+0.15
- minimum bending radius (internal): 10 mm
- connection versions see page 22
- deliverable with or without integrated thermocouple Fe-CuNi (type J, Standard) or NiCr-Ni (type K) (IEC 60584) (ungrounded, standard)
- deliverable with reflection tube
- deliverable with clamping band

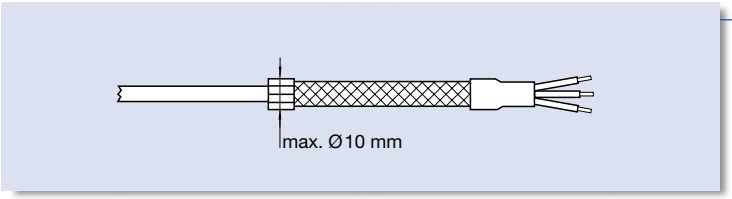
Other dimensions and product varieties on request.
We reserve the right to change technical details.
Please note the installation and storage instructions.

Order Details

hotspring®/Maxi/4.6 x 8.6

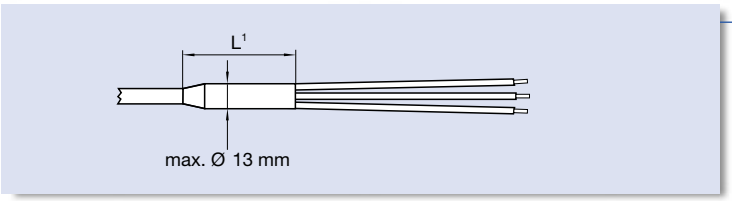
Application : .....
+ Inner-Ø: .....
+ Inner-Ø tolerance: .....
+ Length: .....
+ Position of coils: .....
+ Wattage: .....
+ Voltage: .....
+ Exit: .....
+ Connection length: .....
+ Thermocouple: .....
+ Length of unheated zone: .....
+ Clamping band: .....
+ Reflection tube: .....
+ Quantity: .....

Connection versions hotspring®/Maxi



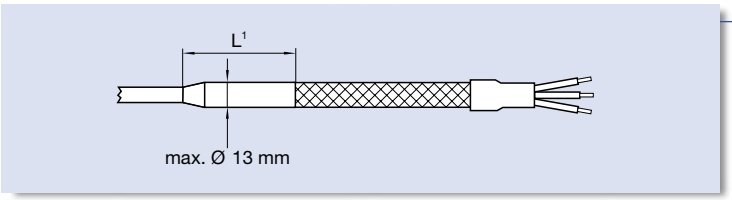
Maxi without head NG, NM, ND

- PTFE insulated Cu-nickel-plated leads, multistranded
- with glass silk insulated protective sleeving
- with braided metal sleeving
- with flexible metal sleeving
- with ground wire



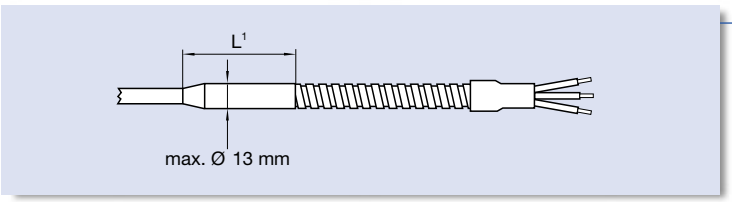
Type Maxi N with head

- glass silk insulated nickel-leads, multistranded
- with ground wire
- high temperature Ni-leads multistranded (with blank groundwire)



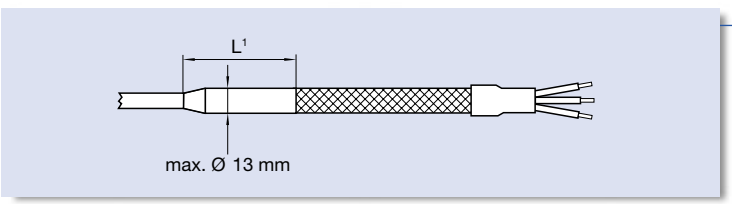
Type Maxi NG with head

- glass silk insulated nickel-leads, multistranded
- with glass silk insulated protective sleeving
- with ground wire



Type Maxi NM with head

- glass silk insulated nickel-leads, multistranded
- high temperature Ni-leads multistranded (with blank groundwire)
- with flexible metal sleeving
- with ground wire



Type Maxi ND with head

- glass silk insulated nickel-leads, multistranded
- high temperature Ni-leads multistranded (with blank groundwire)
- with braided metal sleeving
- with ground wire

[1]Length of head L = 45 mm (Standard)

Variations

hotspring® with reflection tube

Reflection tube

- Increase of maximum sheath surface load
- Protection against mechanical damage
- Measures and tolerances according to heater type considering technical data
- On option:
  coiled-in thermocouple

hotspring® with reflection tube and pull-off ring

Reflection tube with pull-off ring

- Easy dismantling:
  removal from front side possible
- Increase of maximum sheath surface load
- Protection against mechanical damage
- Measures and tolerances according to heater type considering technical data
- On option:
  coiled-in thermocouple
- Other versions on request

hotspring® with clamping band

Clamping band

- High-grade clamping possibility for improving the heat transfer
- Increase of maximum sheath surface load
- Protection against mechanical damage

Variations

hotspring® with inner- and outer tube

Multi-part housings

hotspring® coil heaters with inner- and outer tube

- Even temperature distribution and improvement of heat transfer
- Increase of maximum sheath surface load
- Protection against mechanical damage
- clampable

hotspring® with fixing screw (internal)

Fixing screw internal (for hotspring®/M)

- For fixing a hotspring®/M on a nozzle
- Tension is effected by a slitted knurled screw
- Even temperature distribution and improvement of heat transfer
- Increase of maximum sheath surface load
- Protection against mechanical damage

hotspring® with cap ring

Cap ring (for hotspring®/M)

- For fixing and protection of a sheath thermocouple at a hotspring®/M
- Sheath thermocouple is exchangeable
- Even temperature distribution and improvement of heat transfer
- Increase of maximum sheath surface load
- Protection against mechanical damage
- Easy dismanthing: removal from front side possible

hotspring® lock-system

lock-system (for hotspring®/Mini/F 1.3 x 2.3)

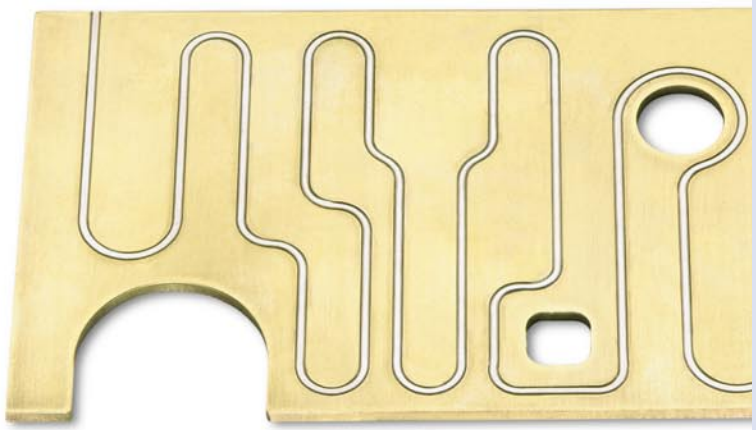
- Low wall thickness: 2.8 mm
- Self clamping mechanism
- Front-installation and removal
- With anti-twist device

hotspring® spike-system

spike-system

- An optimal heat transition between heating element and tool
- Increase of maximum sheath surface load
- Adjustable to a wide range of diameters
- Strong fit – no additional fasteners necessary
- Protection against mechanical damage
- Measures and tolerances according to heater type considering technical data
- On option:
  coiled-in thermocouple

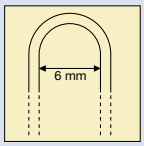
hotslot®
with coil heater
(type WRP)
hotspring®/Mini



Individual power distribution –

Technical data

- Carrier material:
  Brass resp. stainless steel
- Inserted hotspring®/Mini
  with nickel- resp. stainless steel sheath
- Other dimensions and product variants
  (also with other hotspring® coil heaters)
  on request.
- Minimum wall thickness:
  $2.0^{\pm 0.1}$ mm
- bending radius
  of inserted
  heating element:
  min. 3.0 mm
  (Inner radius)



- Sheath temperature of heating element:
  max. 650 °C
- Voltage:
  max. 250 V, Standard: 230 V
- Power tolerance:
  ± 10 %
- High voltage strength (cold):
  min. 800 V-AC
- Insulation resistance (cold):
  ≥ 5 MΩ at 500 V-DC
- Leakage current (cold):
  ≤ 0.5 mA at 253 V-AC
- Standard inner diameter:
  7 at 75 mm (others on request)
- Standard inner diameter tolerance:
  ± 0.05 mm (hole basis on request)
- Standard length:
  25 at 100 mm (others on request)
- Standard length tolerance:
  ± 0.5 mm (others on request)
- Power distribution
- Individual cut-outs, holes or breakthroughs
- Individual connection specification concerning
  position, length and version
- Connection versions see page 13
- on option it can be delivered
  with sheath thermocouple (IEC 60584)
- min. length of unheated zone:
  25 mm
- length tolerance of the unheated zone:
  ± 10%, min. ± 15 mm

Other dimensions and product varieties on request.

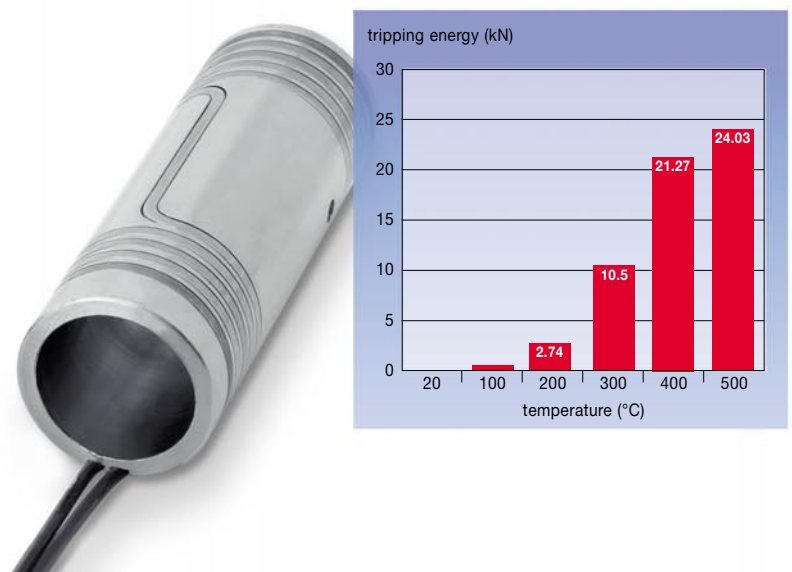
We reserve the right to change technical details.

Please note the installation and storage instructions.

Precise heat

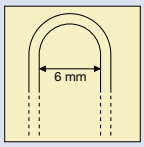
hotslot® with coil heater (type WRP) hotspring®/ Micro

hotslot® FIT-system



Technical data

- Carrier material:
  Brass resp. stainless steel
- Inserted hotspring®/Micro:
  - with nickel- resp. stainless steel sheath (if stainless steel is carrier material)
  - with nickel sheath (if brass is carrier material)
- Minimum wall thickness:
  $1.0^{\pm 0.2}$ mm
- bending radius of inserted heating element:
  min. 3.0 mm
  (Inner radius)



- Sheath temperature of heating element:
  max. 650 °C
- Voltage:
  max. 250 V, Standard: 230 V
- Power tolerance:
  ± 10 %
- High voltage strength (cold):
  min. 800 V-AC
- Insulation resistance (cold):
  ≥ 5 MΩ at 500 V-DC
- Leakage current (cold):
  ≤ 0.5 mA at 253 V-AC
- Standard inner diameter:
  5 at 25 mm (others on request)
- Standard inner diameter tolerance:
  ± 0.05 mm (hole basis on request)
- Standard length:
  25 at 50 mm (others on request)
- Standard length tolerance:
  ± 0.5 mm (others on request)
- Power distribution according to specification
- Individual cut-outs, holes or breakthroughs
- Individual specifications concerning position, length and version of connection
- Connection versions see page 13
- on option sheath thermocouple can be delivered (IEC 60584)
- min. length of unheated zone:
  25 mm
- length tolerance of the unheated zone:
  ± 10%, min. ± 15 mm

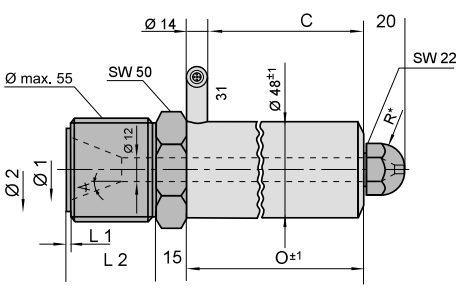
Other dimensions and product varieties on request.

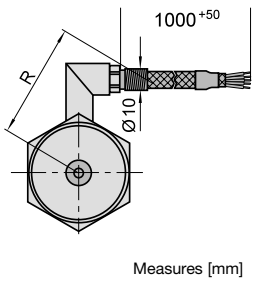
We reserve the right to change technical details.

Please note the installation and storage instructions.

Heating elements for

hotcone® (type BMD) – Heated Machine Nozzle





Measures [mm]

Technical data

- Heated machine nozzle with integrated hotspring® coil heater Maxi/4.6 x 8.6 as complete sealed, plastic-dense system
- the power distribution grants an even temperature control
- with integrated hotcontrol® thermocouple Fe-CuNi (type J) (IEC 60584)
- Shaft-Ø 48 mm for deep immersion into cavity
- between three standard-nozzle tips can be chosen
- Connection: 1000 mm PTFE insulated Cu-nickel plated leads, several wires with ground wire and braided metal sleeving (standard)
- Material savings by short sprue bar
- connection thread can be chosen (Ø max. 55 mm, length max. 45 mm)
- insulation tube on option

Other dimensions and product varieties on request.

We reserve the right to change technical details.

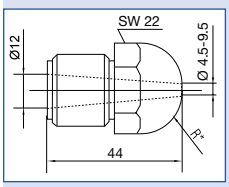
Please note the installation and storage instructions.

Variable measurements

Thread diameter max. 55 mm
L2 thread length and dimension (max. 45 mm)
Ø1 cone diameter
L1 length of the sealed plane (on option)
Ø2 diameter of sealed plane (on option)
∢ flow-in angle of the mass
R* radius of the nozzle tip
R space for connection (min. 65 mm resp. Ø 130 mm)

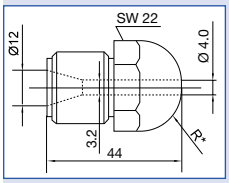
Nozzle tips

- Radius R* according to customer specification
- The diameter of the mass channel in the transition area has to be the same as the diameter of the nozzle tip



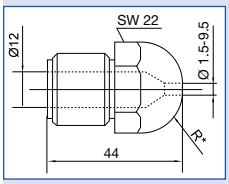
- convex, with continous conical bore
- increase of the flow velocity by slow tapering of the channel

Type 1



- for easy flowing materials or plastics which create filaments resp. have a defined interruption point (ABS, PA, PET, etc.)

Type 2

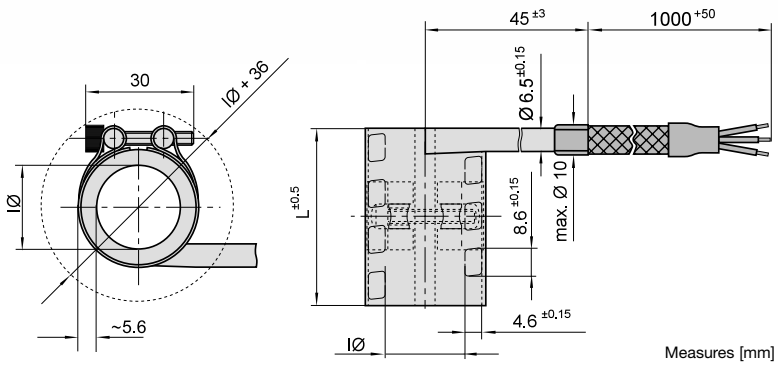


- nozzle tip for processing thermally-sensitive resp. hard flowing plastics (POM, PVC-hard, PPO, PPS, etc.)

Type 3

the plastic-processing industry

hotcone® (type DBM) – Nozzle heating Maxi



Measures [mm]

L: Total length
IØ: Inner diameter
tolerances:
up to IØ 30 mm -0.10/-0.30
up to IØ 50 mm -0.20/-0.40

Technical data

- hotspring® coil heater Maxi/4.6 x 8.6 with clamping band
- Sheath temperature of heating element: max. 750 °C
- Voltage: max. 440 V, Standard: 230 V
- Power tolerance (cold): ± 10 %
- High voltage strength (cold): 1250 V-AC
- Insulation resistance (cold): ≥ 5 MΩ at 500 V-DC
- Leakage current (cold): ≤ 0.5 mA at 253 V-AC
- Surface load: max. 10 W/cm²
- high power with low installation measures
- Connection: 1000 mm PTFE insulated nickel leads, several wires with ground wire and braided metal sleeving (Standard, others on request)
- optimal price-performance ratio
- even temperature distribution
- integrated hotcontrol® thermocouple (ungrounded standard) Fe-CuNi (type J, Standard)/NiCr-Ni (type K) (IEC 60584)
- Measuring point can be chosen
- Connection version can be chosen

Other dimensions and product varieties on request.

We reserve the right to change technical details.

Please note the installation and storage instructions.

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