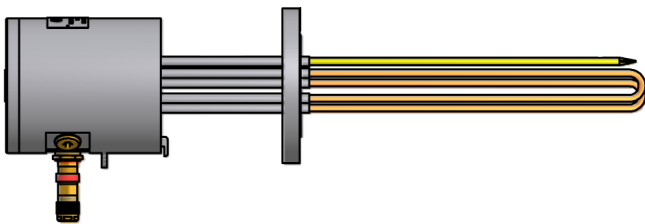


# Explosion-proof Immersion Heater Type D-8680

Sinus Jevi has developed, designed and manufactured explosionproof Ex 'de' heating equipment for hazardous areas. The flame-proof (d) enclosures have been designed for non save areas to protect the environment against gas-explosions, caused by sparking by electrical connections of the heating elements and control devices.



**SINUS  
JEVI** 



Liquids



Gasses



Solids



Spaces



Resistors

**Gas and Dust flame-proof immersion heater type D-8680**

For hazardous areas, Sinus Jevi has developed explosionproof Ex 'd' heating equipment, designed and manufactured in accordance with EN-IEC 60079-0, EN-IEC 60079-1, EN 60079-7 and 60079-31 certified by the independent testing institute ISSeP. The certificates cover zone 1 and zone 2 for hazardous areas. Gas groups II A, II B and II C and temperature classes T6-T1. Dust group Ex tb zone 21.

The flame-proof (d) enclosures have been designed for non save areas to protect the environment against gas-explosions, caused by sparking by electrical connections of the heating elements and control devices. Several types of enclosures for immersion heaters, flanged or screwed, have been described on the next pages.

Each type covers a range of a maximum number of installed hairpin shaped heating elements and giving a range of installed capacities.

The screwed types for dimensions up to 3".

The terminal enclosures have a IP66 degree of protection. Standard the enclosure is coated with two layers, a zinc silicate primer and a top coating. Other coatingsystems on request.

All heaters are standard internal wired on terminals.

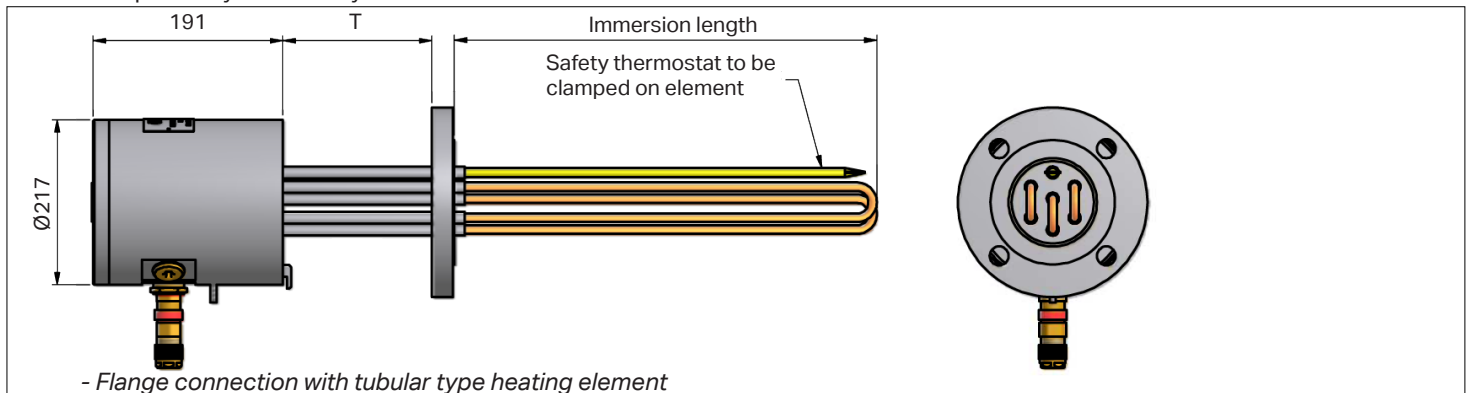
The maximum temperature for the terminal enclosure during operation is 80°C (based on maximum 50°C ambient temperature). If cable entry exceeds 70°C, high temperature cables must be used. The required minimum distance between enclosure and connection flange, to ensure the temperature limit of 80°C in the enclosure, is listed in the following table as a function of temperature classes. Maximum number of cable entries: 4 pcs M25/M20

Marking ATEX    Ex II 2 G D  
                          Ex de IIC T6-T1 Gb            EN/IEC 60079-1  
                          Ex tb IIIC T110°C Db            EN/IEC 60079-31

**Type D-8680 Ex II 2 GD, Ex de IIC T6-T1 Gb - Ex tb IIIC T110°C Db**

Type	Flange 150 LBS	Elements no of max.				Immersion length (mm)	Maximum capacity in oil (Watt)	Maximum capacity in water (Watt)	Maximum capacity in gases (Watt)
		Ø8.5	Ø 10.2	Ø12.7	Ø16				
D-8680-J121-05	6"	Number of elements depend on diameter, pitch and material				500	6.000	18.000	4.800
D-8680-J121-07	6"					750	10.000	18.000	8.000
D-8680-J121-10	6"					1.000	14.000	40.000	12.000
D-8680-J121-15	6"					1.500	21.000	50.000	18.000
D-8680-J121-20	6"					2.000	28.000	60.000	24.000
D-8680-J121-25	6"					2.500	36.000	70.000	30.000
D-8680-J121-30	6"					3.000	44.000	70.000	36.000
D-8680-K181-05	8"					500	9.000	29.000	8.000
D-8680-K181-07	8"					750	15.000	44.000	13.000
D-8680-K181-10	8"					1.000	21.000	60.000	18.000
D-8680-K181-15	8"					1.500	31.500	70.000	27.000
D-8680-K181-20	8"					2.000	42.000	80.000	36.000
D-8680-K181-25	8"					2.500	54.000	90.000*	45.000
D-8680-K181-30	8"					3.000	66.000	90.000*	54.000
D-8680-K241-05	8"					500	14.000	40.000	12.000
D-8680-K241-07	8"					750	20.000	60.000	18.000
D-8680-K241-10	8"					1.000	28.000	80.000	24.000
D-8680-K241-15	8"					1.500	42.000	90.000*	36.000
D-8680-K241-20	8"					2.000	56.000	90.000*	48.000
D-8680-K241-25	8"					2.500	72.000	90.000*	60.000
D-8680-K241-30	8"					3.000	88.000	90.000*	72.000

\* Limitation power by cable entry



**Description**

Suitable for heating of fluids both liquids and gases and also solids. The heater consists of a certified flameproof enclosure D-8680, containing:

- certified electric heating elements (Ex e II) tubular, ceramic or cartridge heating elements.
- one manually protective thermostat with manual reset or one thermocouple or pt100 as a safety device. Thermocouple and pt100 are only applicable in combination with a temperature controller installed in a control panel.
- one control thermostat for fluid temperature. Alternatively, one thermocouple or pt100.
- threaded holes for cable entries and/or plugs of a certified flameproof model Ex d II B or Ex d II C.

The flame-proof enclosure has been built up out of a seamless body, a top cover and base plate. Each cover and base plate has been provided with 6 screw thread windings with a total length of 18 mm. The connection length of the threaded joint between cover or base plate and body should always be 5 thread windings minimum. The cover has been locked with an M4 screw and the base plate with an M6 screw. In the base plate of the enclosure spacer tubes can be welded in which the heating elements are brazed or welded.

Temperature class		Distance enclosure to heater (T)
T6	85°C	50 mm
T5	100°C	75 mm
T4	135°C	100 mm
T3	200°C	150 mm
T2	300°C	200 mm
T1	450°C	250 mm

**Technical specification**

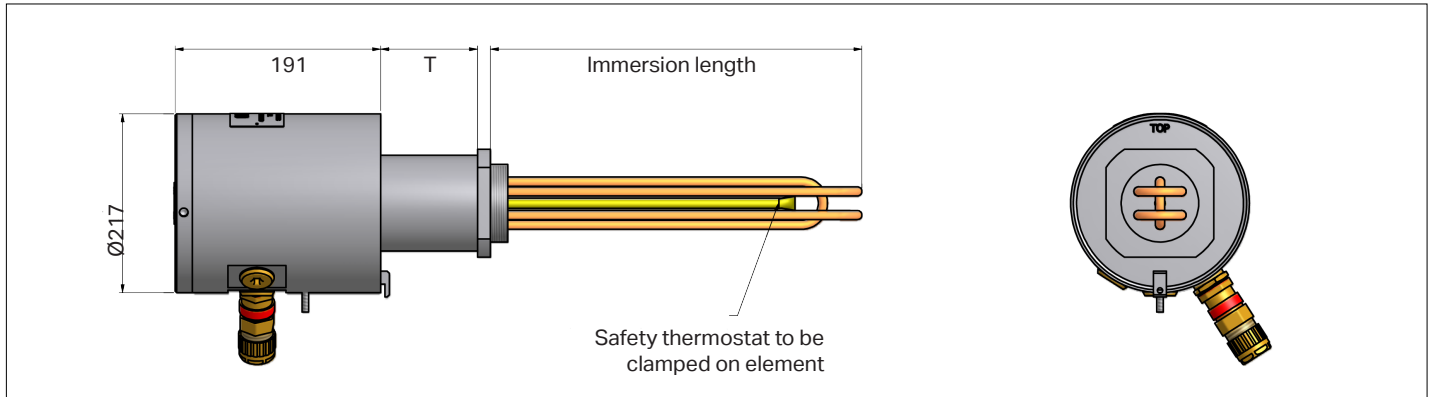
- Tubular heating elements with a diameter of Ø8.5 mm up to and including Ø16 mm and cartridge heating elements of Ø12.5 mm up to including Ø31.5 mm can be applied, also ceramic elements from Ø26 mm up to including Ø46 mm.
  - Material of the enclosure: carbon, low alloy steel, or ferrous steel.
  - Material of heating elements: stainless steels AISI 304, AISI 321, AISI 316, AISI 904L, Inconel 600, Incoloy 800, Incoloy 825, Titanium, SMO, Copper alloy or Nickel alloy.
  - Degree of protection of the enclosure: IP66.
  - The maximum allowable energy-dissipation of the heating elements has been based on a maximum Watt density, determined by the temperature class, type of medium and process conditions.
- The temperature setting of the thermostat, thermocouple or pt100, as stated in the EC type Examination Certificate, is applicable only for heaters immersed into a hazardous fluid flow.

If the heater has not been immersed into a hazardous fluid but forms a part of an apparatus located in a hazardous zone, the temperature setting has to prevent the maximum temperature of the outside of the apparatus to exceed the temperature according to the temperature classification.

**Certification**

Certification number ISSeP 08ATEX006X for heaters in zone 1 & 2 and gas group IIC

Certification number ISSeP 10ATEX040X for heaters in zone 2 & gas group IIA and IIB



Threaded boss from 1½" G BSP up to 3" G BSP with tubular type heating element.

**Flame-proof immersion heater type D-8680 for high working temperatures**

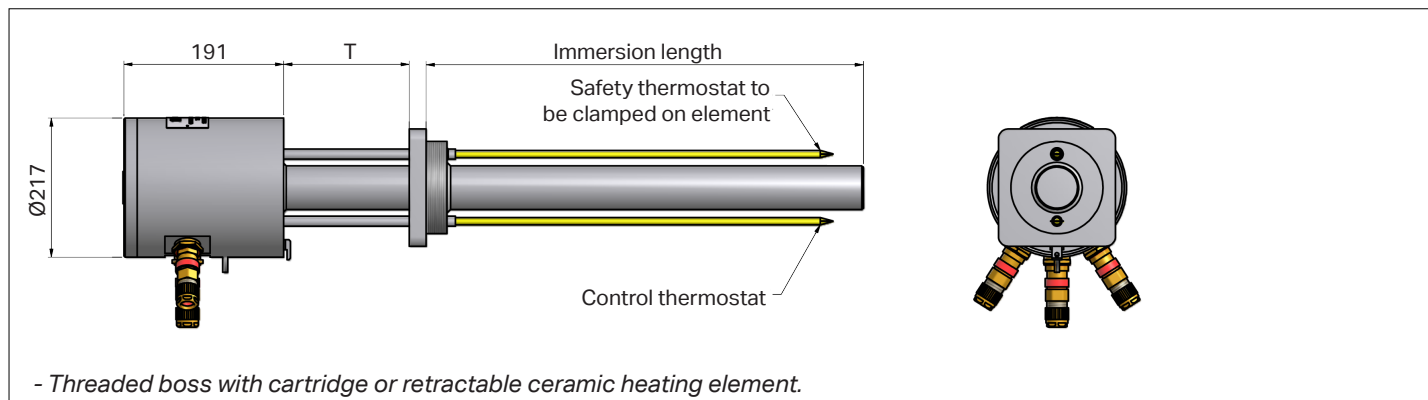
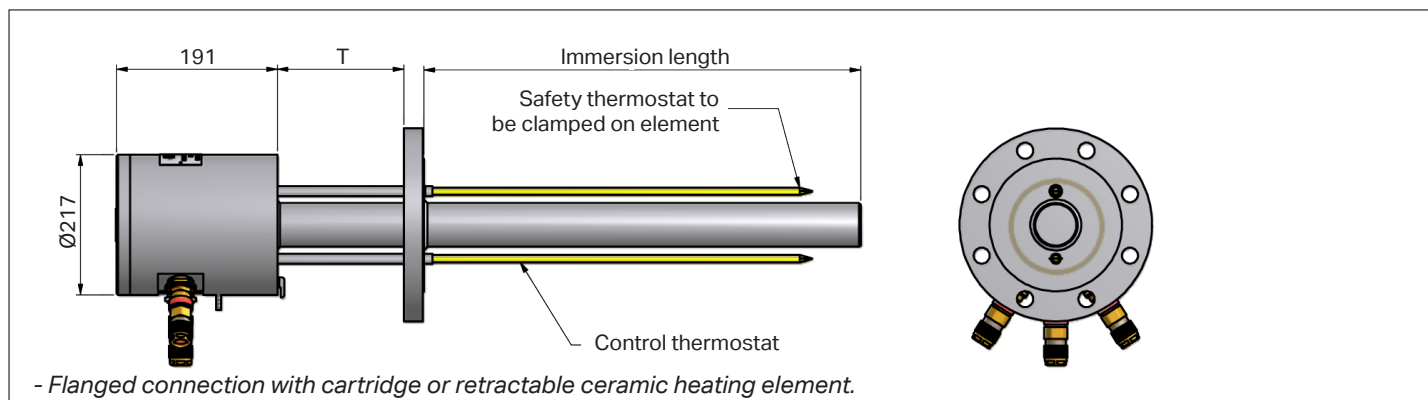
**Flame-proof immersion heaters with retractable ceramic core elements.**

Single or multi core heaters. For horizontal installation (vertical installation available on request).

The ceramic core elements can be withdrawn for inspection or replacement without having to drain the system.

- Ambient temperature -30°C - +50°C (-50°C... +50°C on request)
- The maximum allowable voltage is 690 Volt.

Marking ATEX    Ex II 2 G D  
                   Ex de IIC T6-T1 Gb            EN/IEC 60079-1  
                   Ex tb IIIC T1 10°C Db        EN/IEC 60079-31



**Gas and Dust flame-proof immersion heater type D-8680 VARIATION for relative low working temperatures**

**Description**

The heater serie D-8680 variation is designed to heat a wide range of liquids, gases and solids.

The heater consists of a certified flameproof enclosure Ex d II C, certified electric heating elements Ex e II and a manually reset protective safety device. Unheated length heating elements into the medium is 30 mm minimum. The surface loading of the elements in the heater is determined by the thermal characteristics of the fluid or gas being heated and its operating temperature and pressure. The heaters are designed to operate within an ambient temperature range of -30°C to +50°C.

**Heating elements**

The heater consists of certified electric heating elements Ex e II which can be tubular heating elements with a diameter up to Ø16 mm or cartridge heating elements up to a diameter of Ø31.5 mm or retractable ceramic core elements Ø26 mm - Ø46 mm placed in a metal sheath with welded end plate. Voltage supply up to 690 Volt.

**Mounting**

Threaded boss or flange connection in carbon steel or high alloy steel.

**Set point safety thermostat**

Set point on safety thermostat in medium:  
 Temperature class T1 to T4: 110°C  
 Temperature class T5: 90°C  
 Temperature class T6: 75°C

Set point on safety thermostat inside the terminal enclosure:  
 Temperature class T1 to T4: 90°C  
 Temperature class T5: 85°C  
 Temperature class T6: 70°C

If the cable entries exceed the 70°C suitable high temperature cabling methods must be used. A warning label on the outside of the enclosure next to the cable gland showing the maximum allowable temperature is recommended. By a working temperature of more than 90°C the terminal enclosure will be at a distance from the heater. See table on page 3.

**Temperature safety**

Minimum of 1 over temperature thermostat or thermocouple or pt100 must be installed for guarding flange, plate or screw head and junction box temperature and must be either:  
 - Manually reset at the control panel by key switch or special tool  
 - Manually reset unit inside the terminal enclosure (klixon)  
 - Possibly with added manually reset unit on the highest surface temperature of the apparatus

When the electric heater type D-8680 and his variation does not have a temperature regulation of its own, the process medium temperature for each combination must be regulated with a seperate flameproof control thermostat, thermocouple or Pt100 and a seperate safety thermostat, thermocouple or Pt100 with manual reset. Both devices shall guarantee the temperature limit and the temperature class.

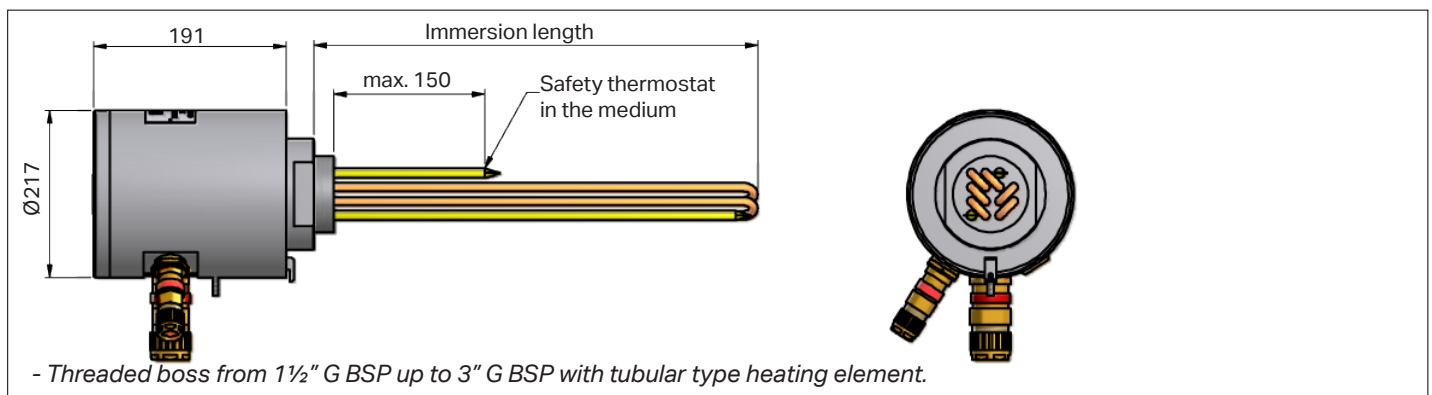
**Special note**

The end user must ensure that the heating elements are always inserted into the liquid or gas.  
 The end user must ensure that there is always a protection against an incorrect direction of flow (e.g. an one way valve). The lowest temperature of the liquid or gas flow is always at the end where the terminal enclosure is situated.

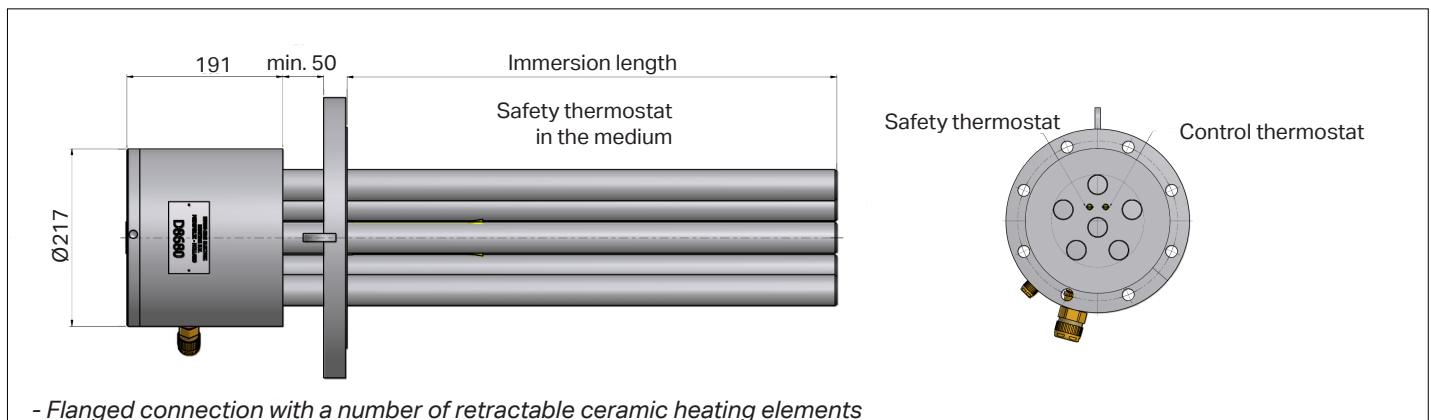
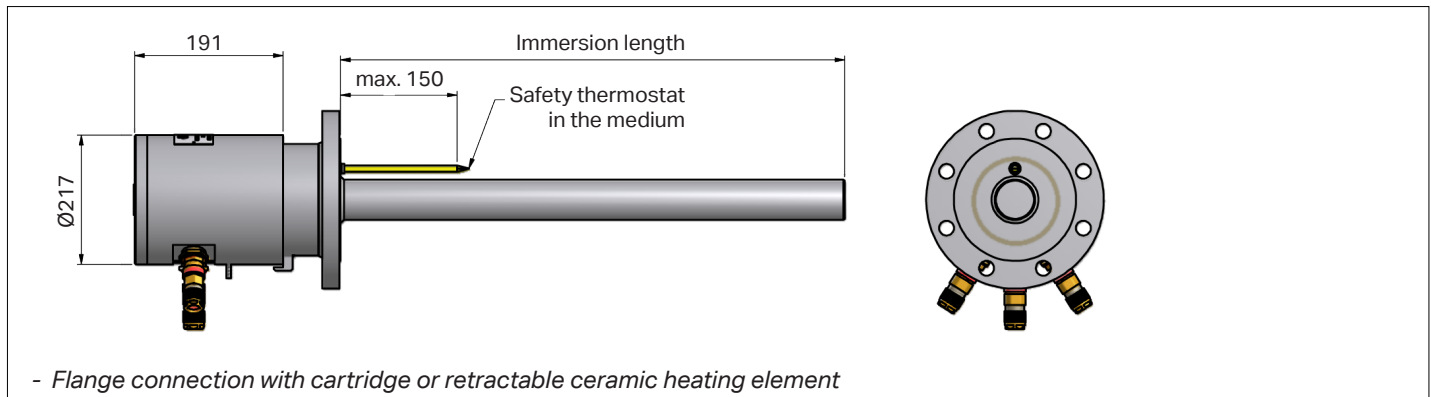
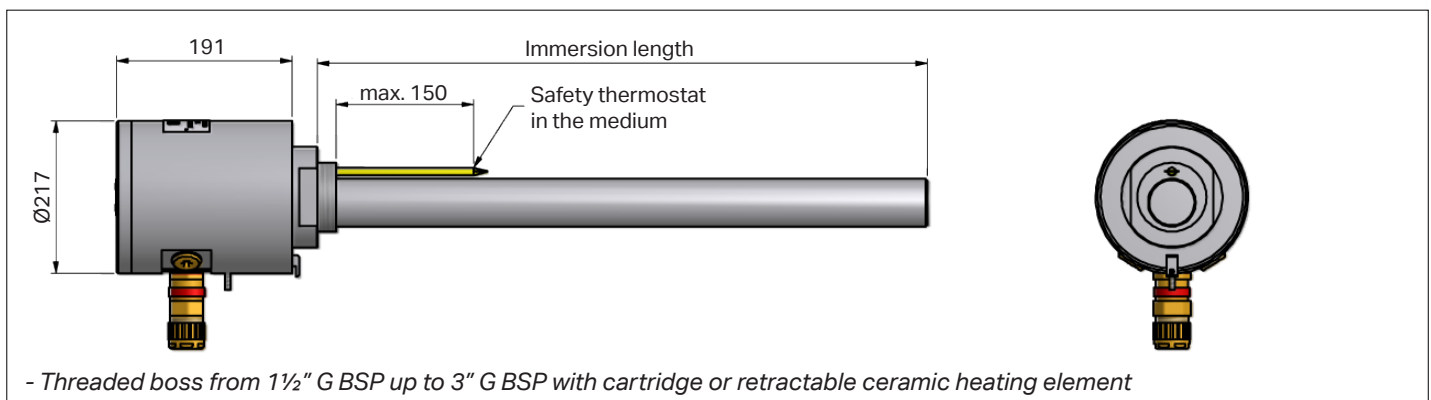
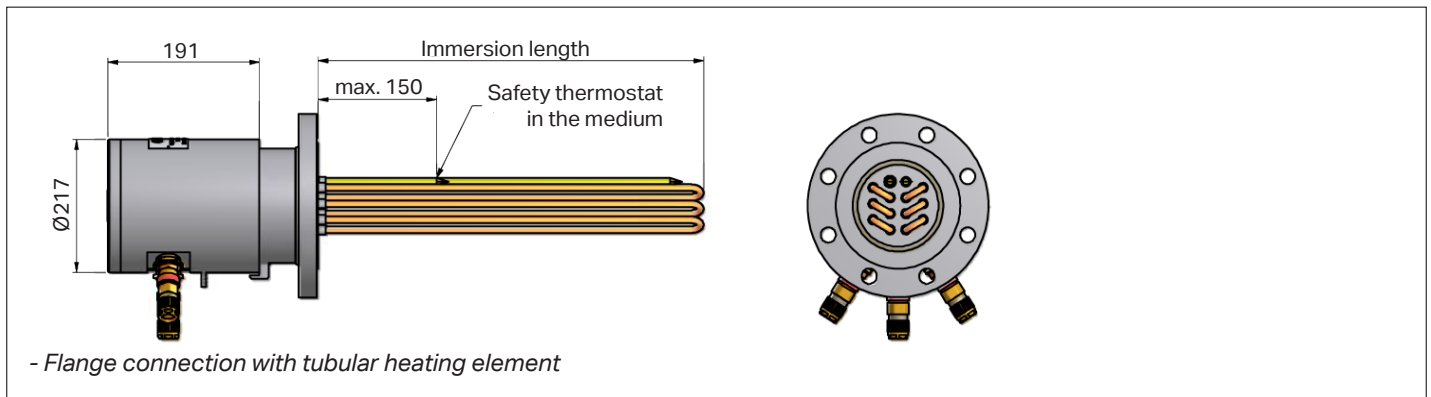
**Terminal enclosure**

The terminal enclosure can be either direct on or stand off depending on the process temperature.

Marking ATEX	Ex II 2 G D	
	Ex de IIC T6-T1 Gb	EN/IEC 60079-1
	Ex tb IIIC T110°C Db	EN/IEC 60079-31



**Flame-proof immersion heater type D-8680 VARIATION for low working temperatures**





---

# SINUS JEVI

Sinus is one of the pioneers in the field of explosion proof heating equipment, today we are still operating at the forefront. We manufacture according to ATEX as well as IECEx and EAC directives.

For the production of Ex-proof equipment a PQAN (Product Quality Assurance Notification) is issued by TUV-Nord. Our ISO-9001 and ISO-14001 systems are also monitored by this organisation.

## NIBE