



# HANDLING MANUAL FOR BOLT HEATER (FLEXIBLE TYPE)

**NAKAI CO., LTD.**



## SCOPE OF APPLICATION:

This heater is used to heat the bolt to provide elongation on it to facilitate the assembling and dismounting operation at the time of tightening or loosening of the horizontal coupling bolt of the steam turbine.

## MATTERS TO BE ATTENDED TO IN USE:



### WARNING

Ensure the voltage measured falls within the acceptable margin of error for the rated voltage before applying electrical current.

If the measured voltage is significantly higher than expected, it can lead to overheating and potentially melt the heater element. Conversely, if the voltage is too low, the insufficient heat generated may result in inadequate elongation of the bolt.



### WARNING

Before applying electrical current, it's essential to measure the insulation resistance of the bolt heater. Only heaters with an insulation resistance of at least 1MΩ must be used.

Additionally, ensure to connect the "EARTH" terminal from the portable electric supply box. Failure to establish a proper earth connection may result in an electric shock.



### PROHIBITION

Insert the bolt heater into the bolt hole before initiating the electric current. Once the current is disconnected, remove the heater from the bolt hole.

Avoid forcefully inserting or removing the heater while it is red hot. Additionally, ensure that any work is not performed with the electric current active.



### CAUTION

If the heater is inserted in a large hole which is not designed, there arises a wide space between the bolt and the heater, which causes a poor heat conduction and an extraordinary resulting in shortening of the life of the heater. Please, therefore, be careful of this point.



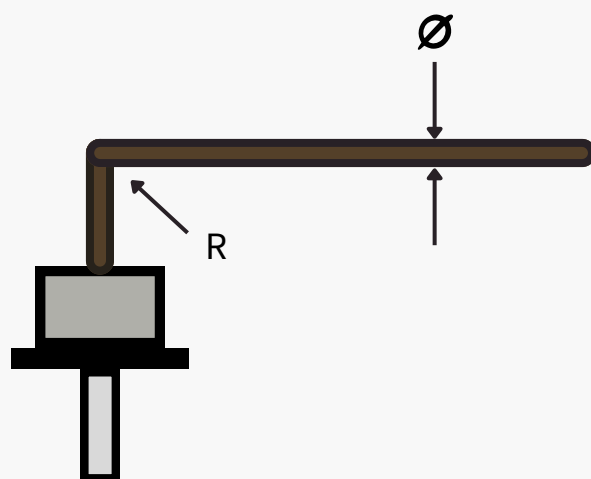
### CAUTION

Make sure, when inserting the heater into the bolt hole, that the effective heat generating of the heater, Heating zone, is completely inserted inside the bolt hole. If the heating zone of the heater is exposed to the air, the inside temperature of the heater becomes higher than 1,100 °C, and that causes melting down of the heater element or insulating destruction in the heating zone of the heater.



### CAUTION

When using the flexible heater, adhere to the following bending radius guidelines. Using a smaller bending radius than recommended may result in the melting of the heater element, insulation damage, or destruction of the heater.



Outside Dia.	Bending Radius
15mm	R=150mm
17.5mm~26mm	R=300mm



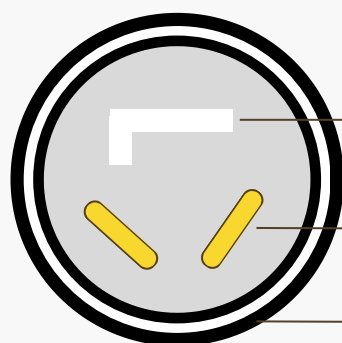
### CAUTION

Ensure that dust does not accumulate on the heater's electrical source plug. The plug must be securely inserted into the receptacle without any looseness, and turn it to the right to lock it in place. Accumulated dust on the plug or a loose connection between the plug and the receptacle can lead to electric shock or fire.



### CAUTION

The white terminal on the plug is designated for EARTH.



→ White Terminal

→ Yellow Terminal

→ Plug



### COMPULSION

When disconnecting the plug, ensure to grasp and pull from the plug itself, not the cable. Pulling the cable instead of the plug can lead to wire damage within the cord, resulting in overheating or potentially causing a fire.



### CAUTION

Do not turn on the device if the plug or cord is damaged, or if the connector is loose. Doing so could lead to electric shock, a short circuit, or a fire.

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### **DO NOT DISASSEMBLE.**

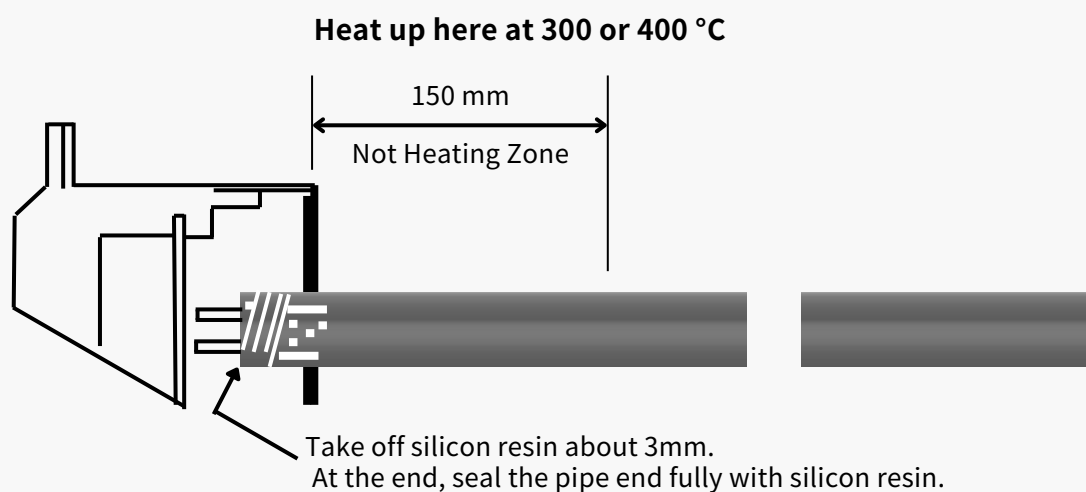
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## **STORAGE GUIDELINES**



### **PROHIBITION**

The bolt heater must be kept in a dry environment. A decrease in the insulation resistance of the bolt heater during periods of inactivity may indicate that the heater has absorbed moisture. To counteract this, turn on the heater for three to four minutes, which should increase the insulation resistance.



### **CAUTION**

To combat moisture in the storage box, replace the moisture-absorbing materials, ranging from 50g to 100g, every six months.