INDUSTRIAL EQUIPMENT / TECHNICAL DOCUMENTATION

NAKAI

BOLT HEATER

HANDLING MANUAL



Scope & Safety Instructions

APPLICATION / SAFETY SYMBOLS / OPERATING PRECAUTIONS

Scope of Application

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


WARNING


CAUTION


PROHIBITION


COMPULSION

Matters to be attended to in use



WARNING

Confirm that a measured value of value of voltage is within the error of the rated voltage before sending the electric current.

If the measured value is unusually high, the resulting high temperature of the heater inside causes melting down of the heater element. Likewise, when that voltage is unusually low, the low heating power causes a shorter elongation of the bolt.



WARNING

Before sending the electric current, measure insulation resistance of the bolt heater. Only heaters having insulation resistance is over 1 MΩ can be used. Also, ensure the heater is electrically grounded (connect “EARTH” from the portable electric supply box; Non earth causes an electric shock.)



PROHIBITION

After inserting the bolt heater in the bolt hole, send the electric current. After cutting off the electric current, draw out the heater from the bolt hole. Never insert or draw out the heater forcibly under the red heated condition. In any case, do not carry out work with the electric current turned on.



CAUTION

If the heater is inserted improperly in a large hole for which it is not designated, there arises a wide space between the bolt and the heater, which causes a poor heat conduction and results in greatly reducing the life of the heater. Please, therefore, be careful of this point.

Heating Zone & Bending Limits

OPERATING PRECAUTIONS / FLEXIBLE TYPE GEOMETRY

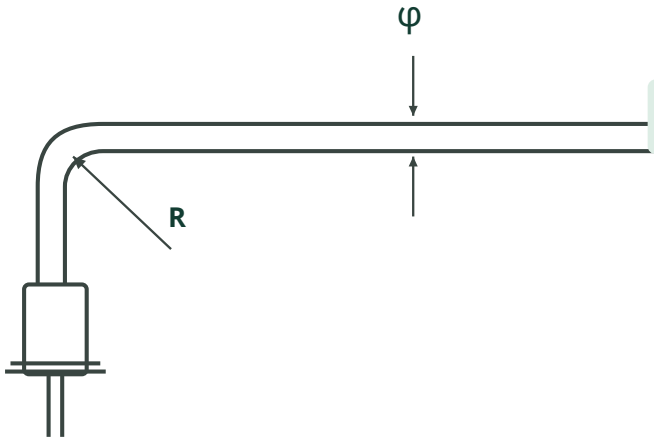
CAUTION

Make sure, when inserting the heater into the bolt hole, that the effective heat generating of the heater (i.e. 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 1100 °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, keep the bending radius equal to or greater than the following:

FLEXIBLE HEATER — BENDING RADIUS



OUTSIDE DIAMETER	MIN. RADIUS
φ 15 mm (φ 0.59 in)	**R = 150 mm** (5.91 in)
φ 17.5–26 mm (φ 0.69–1.02 in)	**R = 300 mm** (11.81 in)

*[Note: If a smaller radius is used, it will cause melting down of the heater element or insulating destruction of the heater.]

CAUTION

Make sure that any dust doesn't adhere to the electric source plug of the heater. Insert the plug completely into the receptacle (ensuring no looseness) and turn it to the right for locking. If dust adheres to the plug, or if the connection of the plug and the receptacle is loose, there is risk of an electric shock or a fire.

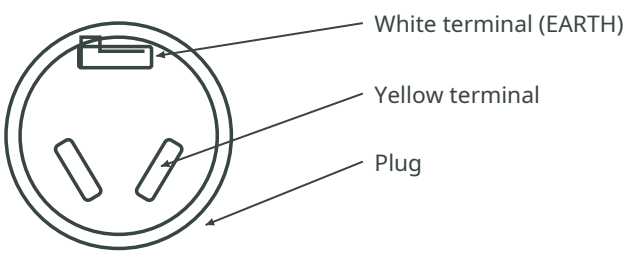
Electrical Connection & Handling

OPERATING PRECAUTIONS / ELECTRICAL SAFETY

CAUTION

The white terminal of the plug is meant for EARTH (grounding).

POWER PLUG — TERMINAL IDENTIFICATION



COMPULSION

When disconnecting the plug, pull out by holding the outside of the plug. Don’t pull out by holding the electric cord, because a part of the wire in the cord can be broken and that causes overheating or a fire.

CAUTION

When the plug or the cord is broken or the connector is loose, don’t switch on the electric power that causes an electric shock, a short-circuit and a fire.

DON’T TAKE APART OR ATTEMPT REPAIR

Don’t reconstruct. Don’t take apart or attempt repair because it may cause a fire or an electric shock or an injury. Repairs shall only be performed by the manufacturer or an authorized service center.

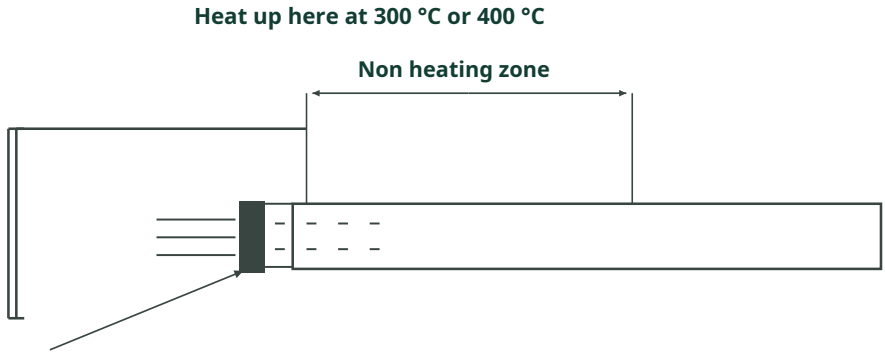
Storage & Warranty Conditions

STORAGE PROCEDURE / MANUFACTURER WARRANTY / INTERNATIONAL CLAIMS

PROHIBITION

The bolt heater should be stored in a dry room. If insulation resistance of the bolt heater falls during storage or rest time, it may be due to moisture being absorbed by the heater. To recover from moisture ingress switch on heater for three or four minutes as follows, and insulation resistance should improve.

STORAGE — MANUFACTURER HEATER DIAGRAM



Take off silicon resin about 3 mm (1/8 inch).
At the end, seal the pipe
end fully with silicon resin.

CAUTION

For resisting against moisture in the storage box, exchange moisture proof materials, 50 g - 100 g, for half a year.

Manufacturer's Warranty

The manufacturer provides a warranty period of one (1) year from the date of delivery, subject to the manufacturer’s terms and conditions. Warranty coverage is subject to proper handling, operation, and storage in accordance with the manufacturer’s instructions.

In the event of a reported defect, the manufacturer will investigate the cause and determine warranty eligibility based on its findings.

International Warranty Claims

For internationally supplied products, warranty claims and any necessary return arrangements must be coordinated in advance through Nichiboku and remain subject to the manufacturer’s assessment and applicable warranty conditions.