



Warning: Read before use!

Usage Manual for Okazaki Heaters

1. Structure

The Okazaki heater is comprised of heating element (around which is firmly packed a high purity inorganic insulating substance surrounded by a metal sheath), a moisture-proof sleeve (to prevent moisture from entering through the end), and a lead wire. By this, the heating element is completely sealed from contact with outside air, thereby minimizing oxidation and corrosion. Compared to a bare heater, the Okazaki heater has a longer service life and a higher thermal efficiency.

2. Danger



Do not use the heater above its specified rating or for any purpose other than the intended purpose.

3. Warning ... Heater storage and handling



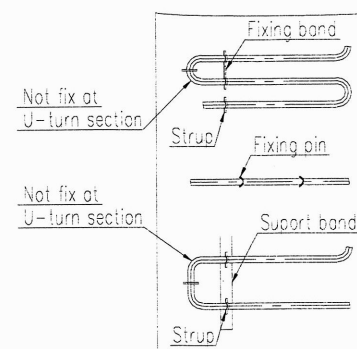
In addition to taking measures to (a) assure sufficient heat transfer to the object to be heated and (b) accommodate thermal expansion, be alert to the following and stop using the unit immediately should you notice any degradation in performance.

- (1) Do not store the unit in a location exposed to rain, dampness or direct sunlight. If the unit is kept in a highly humid environment, the insulation resistance will drop and possibly lead to current leakage (a desiccant is effective for absorbing moisture). Periodically inspect the unit. If you will be using the unit after an extended storage period, first apply a voltage of about half the rated voltage. Gradually increase the applied voltage to restore the insulation through self-heating. All power connections should be made carefully and correctly.
- (2) If you will be doing any welding in the vicinity of the heater, take care that no arcs or spatters strike the sheath. The sheath has a very thin wall and can easily be damaged (direct physical damage or a drop in insulation resistance) by an arc strike.
- (3) Take action to prevent burns or other such injuries through bodily contact by, for example, placing insulating or protective covers as appropriate.

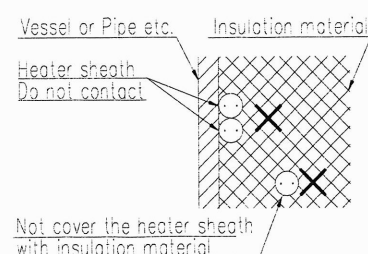
4. Caution ... Heater Installation



- (1) Before fastening the heater, make sure that it will be in sufficiently close contact with the object to be heated. Adjust by tapping lightly with the flat of a wooden mallet (do not use anything hard, such as a metal hammer or a non-round object...you might damage the sheath).
- (2) Never weld the unit in place so that the heater sheath comes in direct contact with the object to be heated. This could damage the sheath.
- (3) The bending radius of the heater should be at least three times the diameter of the heater sheath. A smaller radius might damage the sheath. Also, do not bend the sheath repeatedly.
- (4) During installation, be careful not to damage the sheath with tools or the like.
- (5) Do not fasten the U-turn sections of the heater sheath (Fig.1).
- (6) Do not place one section of the element in contact with another (Fig.2).
- (7) Do not surround an element with insulation (Fig.2).
Doing so may damage the element by through excessive heating

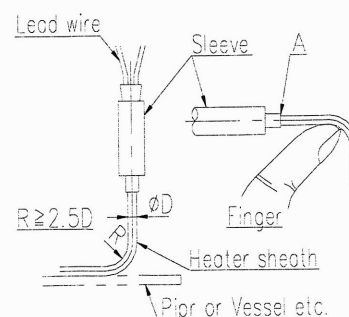


(Fig.1)



(Fig.2)

- (8) The lead wire and the sleeve should be protected from excessive heat by surrounding them with insulation or exposing them to outside air (for a standard heater, the maximum temperature of the sleeve end should not exceed 80°C).
- (9) When installing a micro-heater model, avoid placing excessive force on the sleeve by using your finger to support it when making the initial radius bend (Fig.3). Avoid bending the sleeve as much as possible, and be especially careful not to put too much force on Section A.
- (10) Heater models H35, H36 and H75 have a lead wire of solid nickel conduct which is susceptible to breakage at the connection of lead wire if bent excessively or repeatedly. Take care not to put much force on the area near the connection of lead wire when installing or removing or w



(Fig.3)

5. Caution ••• Inspection

Before and after installing the heater, you should check the following before turning on the power. These items should also be checked as part of daily maintenance.

- (1) Insulation Resistance : Check to see that the insulation resistance between the heater terminal and the sheath is at least $5M\Omega$ at room temperature. Take this measurement with a 500V DC Megger if the sheath diameter is up to $\phi 1.6$ or with a 250V DC Megger if the sheath diameter is over $\phi 1.6$. Be aware that heater models having a connector may show a lower resistance in a highly moist environment (because of the effect of moisture on the terminal block). If this is the case, dry the moisture with a hair dryer or the like and take the measurement again.
- (2) Continuity resistance : With a multimeter, measure the resistance between terminals. If the resistance is other than normal or if you notice some other irregularity, contact our offices as follows. On calling, please refer to job numbers or work numbers stated in our inspection certificate or engraved onto the front of the heater.

6. Caution ••• Disposal

Please dispose of the unit or any replaced parts in a proper and environmentally responsible manner.

WARRANTY

Our products have cleared proper inspection conducted by us in accordance with the standards established by our company. Should any irregularity of the Products take place, however, please contact our branch offices or business offices nearby your places.

PERIOD OF WARRANTY

Period of warranty will be limited to one year from the date of the delivery.

SCOPE OF WARRANTY

Should any irregularity of the Products take place during the foregoing period of warranty, such Products will be either replaced with new ones or repaired by our judgement. However, if the irregularity happened due to any of the following, such Products will not be covered by the foregoing warranty.

- (1) improper use or handling of the Products*
- (2) any reason irrelevant to the Products*
- (3) remodeling, alteration or repair by other person or company*
- (4) Products were the ones manufactured for the purpose of consumption (expendable supply)*
- (5) irregularities of the Products were caused by fire, accident or any other natural reason such as act of god*

In addition, the foregoing warranty is limited to the replacement or repair of the Products of irregularity and excludes compensation of any other indirect or consequential damage.

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