



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.

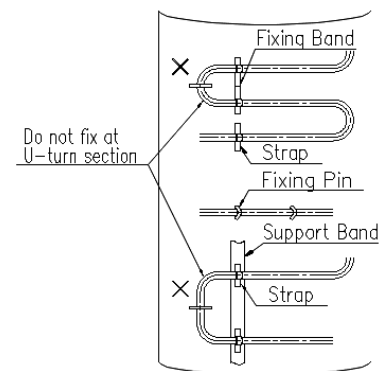
3. Warning ··· Heater Storage and Handling

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.

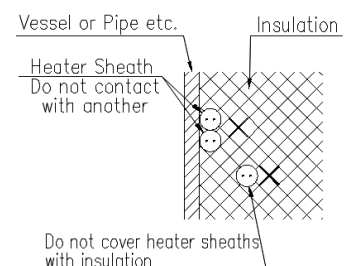
- (1) Do not store the unit in a location exposed to rain, dampness or direct sunlight. If the unit is kept in a highly humid environment, the insulation resistance will drop and possibly lead to current leakage (a desiccant is effective for absorbing moisture). Periodically inspect the unit. If you will be using the unit after an extended storage period, make sure there is no insulation resistance drop before use. Do not bundle, pull, or place objects on the power supply leads. This may cause damage. 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) During installation, be careful not to damage the sheath with tools or the like.
- (4) Do not fasten the U-turn sections of the heater sheath. (Fig.1)
- (5) Do not place the heated section of heater sheath in contact with another. (Fig.2)
- (6) The bending radius of the heater should be at least five times the diameter of the heater sheath. A smaller radius might damage the sheath. Also, do not bend the sheath repeatedly. (Please note that bending or re-bending after heating must not be performed under any circumstances). Furthermore, should you require bending to a smaller diameter, please consult us. (Fig.3)
- (7) Do not surround the heated section of heater sheath with insulation. (Fig.2)
- (8) Ensure that the lead wires and sleeve sections are not buried within the insulation material or installed within a heated atmosphere, thereby preventing them from becoming subject to high temperatures.

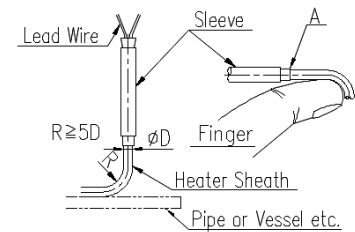


(Fig. 1)



(Fig. 2)

- (9) When bending the Micro Heater near the sleeve section, hold it with your thumb and avoid extreme bending. Do not apply force to the sleeve. In particular, do not apply force to section A. (This may cause heater damage) (Fig.3)
- (10) Heater models H35, H36 and H75 have a lead wire of solid nickel conductor, which is susceptible to breakage at the connection of lead wire if bent excessively or repeatedly. Care should be taken not to put much force on the area near the connection of lead wire when installing or removing or wiring.
- (11) Twisting the sleeve or applying force to its base may damage the welded joint, leading to insulation resistance drop or wire breakage. The tip of the single-terminal heaters is weld-sealed. It has a shape that bulges beyond the sheath diameter. When securing the tip, do not hook onto the tip itself; instead, secure it approximately 10 mm away from the tip.
- (12) Do not use the mounting section of the installed heater as a substitute for scaffolding or support equipment.
- (13) Please consult us in advance when installing our heaters on non-metallic surfaces.



(Fig. 3)

5. Operation

- (1) For heater control at high temperatures (300°C or above), employ thyristor phase control (SCR control) with appropriate PID values and operate using soft start. Take care not to exceed the maximum operating temperature. We cannot guarantee service life for SSR control or ON-OFF control.
- (2) When installing thermocouples for temperature control or overheat prevention, ensure they are fitted so that at least five times their outer diameter from the tip is in contact with the target object. Always install an earth leakage circuit breaker in the heater power supply circuit.
- (3) Ensure the heater sheath or sleeve is not exposed to corrosive substances, chlorine, or similar atmospheres.
- (4) Should modifications be required to a heater after it has been heated and raised to temperature, please notify us. Depending on the condition, a complete replacement may be necessary.

6. Caution ••• Maintenance

You should check the following, before and after installing the heater, for daily maintenance and before turning on the power.

- (1) Insulation Resistance : Check to see that the insulation resistance between the heater terminal and the sheath is at least 5MΩ at room temperature. Take this measurement with a 500V DC Megger if the sheath diameter is up to φ1.6 or with a 250V DC Megger if the sheath diameter is over φ1.6. 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 : Measure the resistance between terminals using a tester or similar device and confirm that the resistance value is normal. Should any abnormality be detected during inspection, please contact our sales department via the details provided on the following page. In that case, we kindly request you to provide the inspection certificate or the work number and job number shown on the product for our reference.
- (3) The withstand voltage test is a breakdown test; repeated testing may cause insulation breakdown. Whilst we do not perform repeated testing except the factory acceptance test, please ensure to keep the necessity of withstand voltage testing to a minimum after delivery.
- (4) Please ensure the heater applied voltage remains within the design specification range. (Heater power increases or decreases with the square of the voltage)
- (5) The O-ring on the terminal head connector may deteriorate prematurely due to the ambient environment. (light, ozone, etc) Please inspect regularly and replace it if any cracks or similar damage are found.

7. Caution ••• Disposal

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

Green Procurement

Okazaki Manufacturing Company has established a policy for the control of hazardous chemical substances as an environmental measure, and promotes green purchasing and procurement activities that take the environment into consideration.

Security Policy

Okazaki Manufacturing Company handles customer information as a critical asset. We thoroughly recognize the importance of ensuring confidentiality and protecting information, and have implemented security measures through company rules and regulations. To prevent the leakage of information, we take steps such as installing anti-virus software on company computers, implementing measures to prevent data leaks when exchanging data between computers, and prohibiting employees from taking computers out of company facilities and bringing their own private computers into company facilities. In addition, we comply with the Act on the Protection of Personal Information and refrain from activities such as making digital copies of our customers' business cards.

Product Warranty

Okazaki Manufacturing Company conducts appropriate product inspections based on our own company standards. If a problem occurs with the product, contact your nearest service representative with the specific details of the problem.

Warranty Period

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

Scope of Warranty

If, during the warranty period specified above, a problem occurs due to a fault attributable to Okazaki Manufacturing Company, the product shall be replaced or repaired.

However, this warranty does not apply in the following cases:

- (1) If the product has been handled or used improperly
- (2) If the cause of the problem is attributable to factors external to the purchased product
- (3) If modifications or repairs have been performed by a party other than Okazaki Manufacturing Company
- (4) If the product is used for purposes or applications in which the product is intended as a consumable item
- (5) If corrosion such as salt damage occurs due to usage in a corrosive environment.
- (6) In other cases such as a natural disaster or accident

In addition, this warranty does not apply if the product is not used in accordance with the details specified in prior discussions, the conditions of use, the precautions, or the recommendations described in the product drawings created by Okazaki Manufacturing Company.

Furthermore, the scope of the warranty is limited to the purchased product itself, and it does not cover other damage arising from the problem with the purchased product.



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