

Low-temperature high-humidity mist  
circulation Thaw system

# Thawing Meister

<FH-Z FH-A3000>

PAT.3148531

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## Low-temperature high-humidity mist circulation thaw system

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**Quickly thawing with high-humidity mist !**

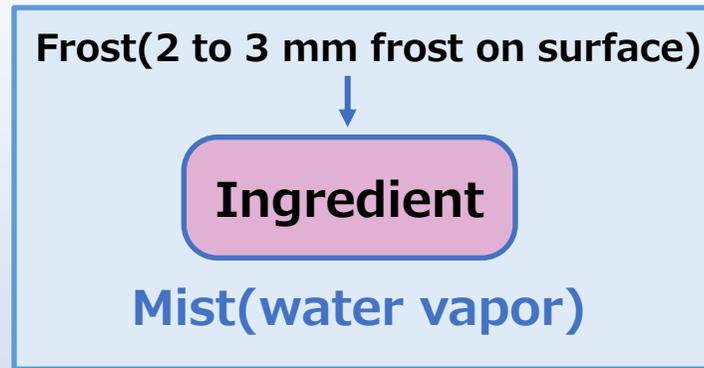
**Perfect for preventing bacteria inside the chamber !**

Thawing machine “Thawing meister” uses an innovative thaw system “low-temperature high-humidity mist circulation thaw system”.

It is quality friendly and almost free from thawing errors.

It is safe because it is equipped with ultra high-power ultraviolet sterilizing lamps to prevent bacteria in the chamber.

## ■ Thawing principle

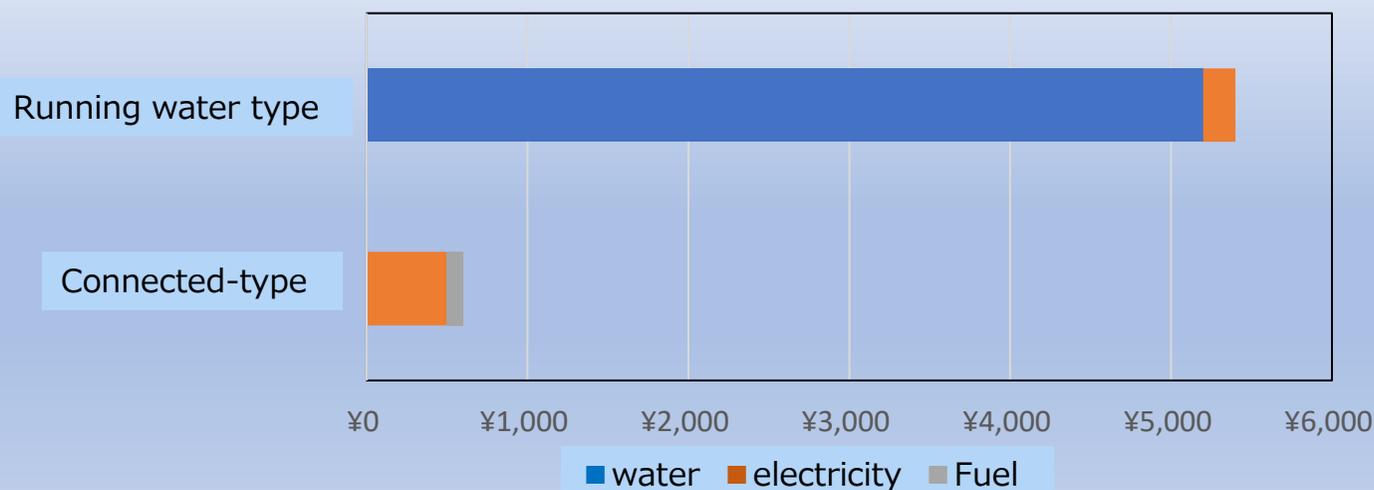


When consecutively sending water vapor to inside, temperatures instantly controlled at low temperature (because it is possible to choose-setting to between 5 to 30°C) as soon as water vapor enters inside even if the temperature is 100 degrees Celsius. Water vapor builds up condensation at the melting temperature when water vapor becomes liquid (water) by sensible heat on surfaces of thawed items. When water vapor at 100% of relative humidity is condensed (water vapor->water), the latent heat is 539.8 kcal/kg, and thaw is driven with the condensed latent heat. It is quickly and safely thawed at relatively low temperatures, as it has the latent heat that is 6.7 times as much as the latent heat of 79.7 kcal/kg when ice becomes water. As for the actual thawing, water vapor is condensed to frost on surfaces of thawed items. At that time, thaw with condensed latent heat is started and water vapor is further condensed onto the frost one after another. Then the frost starts thawing, the thawed water (water drops) flow downwards, and it is further thawed until centers of thawed items go through the maximum crystal melting range (-5 to -1°C) as time goes by. The phase moves to cooling and refrigerating to keep thawed items fresh afterwards according to the preset control.

# ■ Advantageous economics

● The running cost is about 1/8 of that of running water thawing, which is definitely advantageous.

	Thawing meister Connected-type	Running water (Thawing with groundwater)
Water consumption and wastewater treatment	<ul style="list-style-type: none"> <li>• 3ton(Ingredient)×0.03(water)×@200yen=18yen</li> <li>• drainage 3ton×0.03ton×@250/t=23yen</li> <li>• Calculated assuming use of 30 tons of drinking water per ton</li> </ul>	<ul style="list-style-type: none"> <li>• 3 tons x 7 times groundwater/drainage@250/t=5,250yen</li> <li>• Calculate unit cost of wastewater treatment at 250 yen</li> </ul>
electricity expenses	<ul style="list-style-type: none"> <li>• Refrigerator 2.2kw × @20/kw × 4h=176yen</li> <li>• Fan 1.2 × @20/kw × 12h=288yen</li> </ul>	<ul style="list-style-type: none"> <li>• Pump 1.5kw × @20 × 8h=240yen</li> </ul>
Fuel expenses	boiler fuel oil@120 × 1L=120yen	—
Total	625yen	5,490yen



# ■ Characteristics of thawing meister①

- It is possible to thaw with a few drips by putting qualities on the top priority with low-temperature high-humidity mist inside.
- It is fundamental that the more mature the cells of the items are, the lower temperatures the items are thawed.
- It is easy to maintain the equipment as the internal thawing fan units are placed on the walls.



conventional  
thawing



mist  
thawing

Please see the photos on the left. This is a thawed loin meat. The meat on the upper side was thawed using the "conventional thawing method" and the meat on the lower side was thawed using our thawing machine "Thawing Meister".

With the conventional thawing method, the surface of the raw material is whitish and discolored, whereas the mist thawed ingredient shows no discoloration. In addition, the conventional thawing method causes many outflows of good flavor (drippings), resulting in a loss of quality, etc. Mist thawing allows thawing with the highest priority on quality, with minimal drippings.

## ■ Characteristics of thawing meister②

- It is quality friendly and almost free from thawing errors.
- Advancements in control panels have made it easy for anyone to handle, eliminating the need for skilled workers.
- It allows for lower thawing temperatures and more stable quality.
- Equipment cost is average among thawing machines.
- Excellent quality control and immediate response to seasonal temperature changes
- It can thaw raw food and processed food as well, which is convenient and wide-ranging.
- UV-C lamps can be used to prevent bacteria in the chamber, and are effective for the air circulating in the chamber and the heat exchanger.
- It can be used as a chilled storage and for low-temperature storage.
- Since temperature control is fundamental, digitization can be easy and records can be kept.
- It can be used in a wide range of thawing methods.
- It is easy to install because existing boilers can be used.



# *Connected-type FH-A3000 Thawing system*①



## **FH-A3000**

It is possible to start thawing immediately as there is no need of large scale constructions.

The photo shows the food factory for fish eggs (salmon roes).

## **FH-A3000**

It is easy to move equipment for production layout changes in factories.

The photo shows three equipments used at a ham and sausage factory.



# Connected-type FH-A3000 Thawing system ②



The numbers of necessary carts are connected according to the amount of thawed ingredients, which enables to operate at the minimum cost.



Cart for thawing  
Product's temperature is checked after completion of thawing.



Hygiene control is ensured because it is possible to wash carts by separating them and visually inspecting them.

# Connected-type FH-A3000 Thawing system ③



It is standard that the numbers of shelves can be changed to six or nine shelves.

## ● Connected-type outline specifications

	FHA-A3000	FHA-A1000
Outer size	W1,880×D1,150×H2,250	W1,500×D800×H2,000
Refrigerator	3.0kw	1.5kw
Bogie dimensions (maximum number of connections)	W1,880×D1,000×H1,750 (6 units)	W1,500×D800×H1,500 (3 units)
Thawing amount (maximum)	About 2,000kg~3,500kg	About 800kg~1,500kg
Thermometer	Digital paperless type	Digital paperless type
Reversing cart dimensions	W1,880×D500×H1,750	W1,500×D500×H1,500

# Stationary-type FH-Z Thawing system①



## FH-10Z

Five rooms (pass-through)  
The photo shows equipment to thaw the large amount of hams and sausages.  
Forty to fifty tons are thawed per day.



## FH-10Z

Four rooms  
(SUS304 inside)



## FH-10Z

One room (pass-through)  
The photo shows equipment to thaw seasoned cod roes, and five tons are thawed per day.



## FH-10Z

Four Rooms (pass-through)  
The photo shows equipment to thaw the large amount of hams and sausages, and thirty tons are thawed.

# Stationary-type FH-Z Thawing system②



**Cart for thawing**

Carts are designed according to the sizes of ingredients as requested.



Thawing under preparation



Thawing finished.

## ● Stationary-type outline specifications

	FH-5Z	FH-10Z	FH-10Z
Outer size	W4,000×L5,200×H2,500	W4,500×L10,500×H2,500	W7,700×L10,500×H2,500
Thawing amount	About 3,000kg~5,000kg	About 5,000kg~7,000kg	About 7,000kg~10,000kg
Refrigerator	3.7kw outdoor	7.5kw outdoor	15kw outdoor
Heat exchanger	Stainless fins	Stainless fins	Stainless fins
Thermometer	Paperless type	Paperless type	Paperless type



## Contact Information

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