

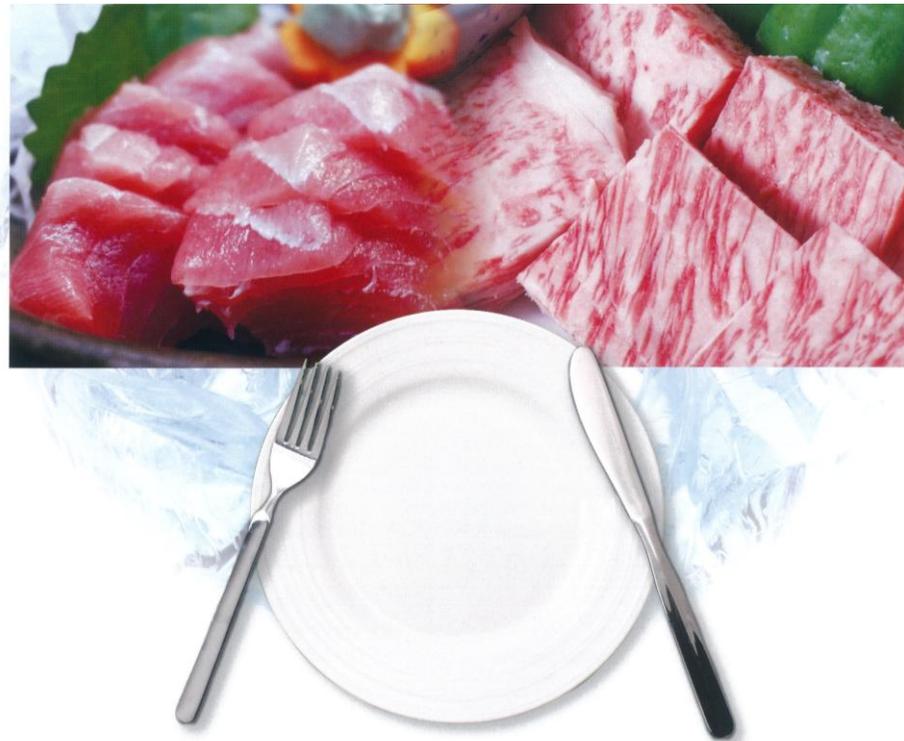
Automatic thawing (sensor)   Programmed thawing (timer)   Manual thawing (optional)

backyard

kitchen

small series

# THAWING MEISTER



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

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

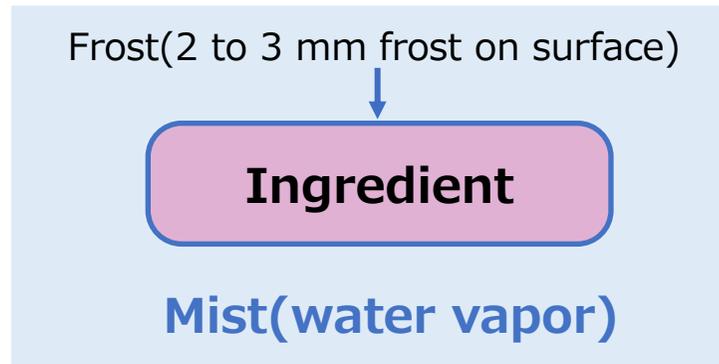
**Perfect for preventing bacteria inside the chamber !**

Fuji Engineering is particularly confident in the content of the thawing method in their operations.

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



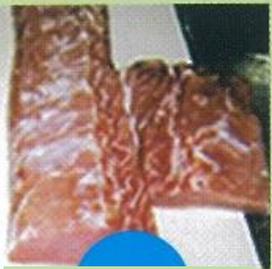
When consecutively sending water vapor to inside, temperatures instantly controlled at low temperature (because it is possible to choose-setting to between 5 to 30°C) as soon as water vapor enters inside even if the temperature is 100 degrees Celsius. Water vapor builds up condensation at the melting 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.

## ■ 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.



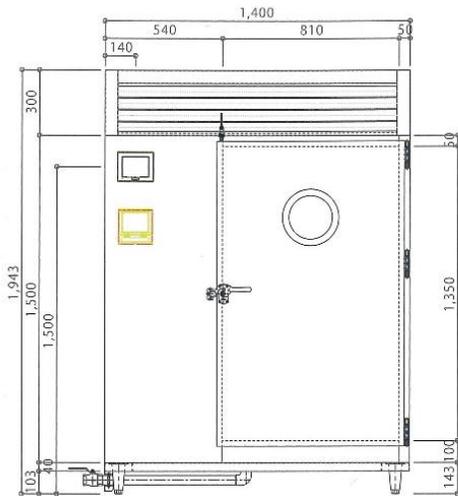
# Low-temperature high-humidity mist thaw system

# FH-250

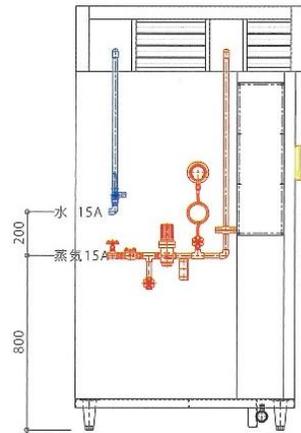
**Variable number of shelves**

**Same control type**

Variable thawing shelves (standard 7 shelves) are used, and up to 15 shelves can be stored. Although this is the smallest model in our mist-type thawing machines, there is no difference in thawing quality. Despite its compact size, it is a workhorse that performs the dual roles of thawing and keeping cold. Since its development, we have made many improvements such as UV sterilization lamps and control panels, and we still receive a lot of support from our customers.



front view



left side view



**achievement**

chicken

pork

fish

laboratory

etc.

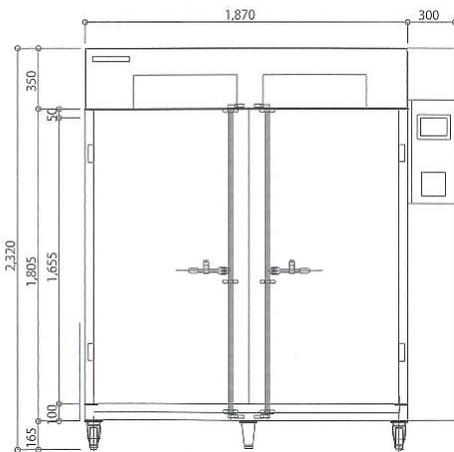
# Low-temperature high-humidity mist thaw system

# FH-300

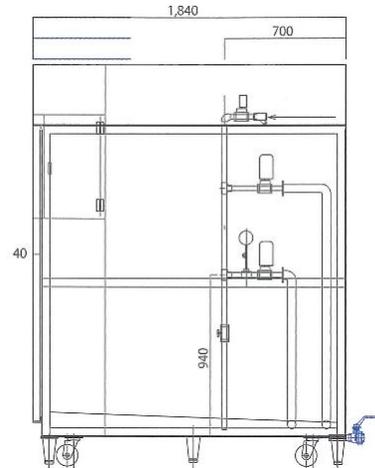
Storage of 2 inner racks

Individual control type

Separate operation control is possible with the 2-chamber type. Since thawing is possible for different types of products, you can actually use the machine as if you were using two thawing machines. This is useful when there are many thawing varieties or when you want to adjust the thawing time. It is convenient for use in limited space, such as in the kitchens of restaurants and supermarkets.



front view



left side view



achievement

chicken

Pork

horse meat

fish

shellfish

etc.

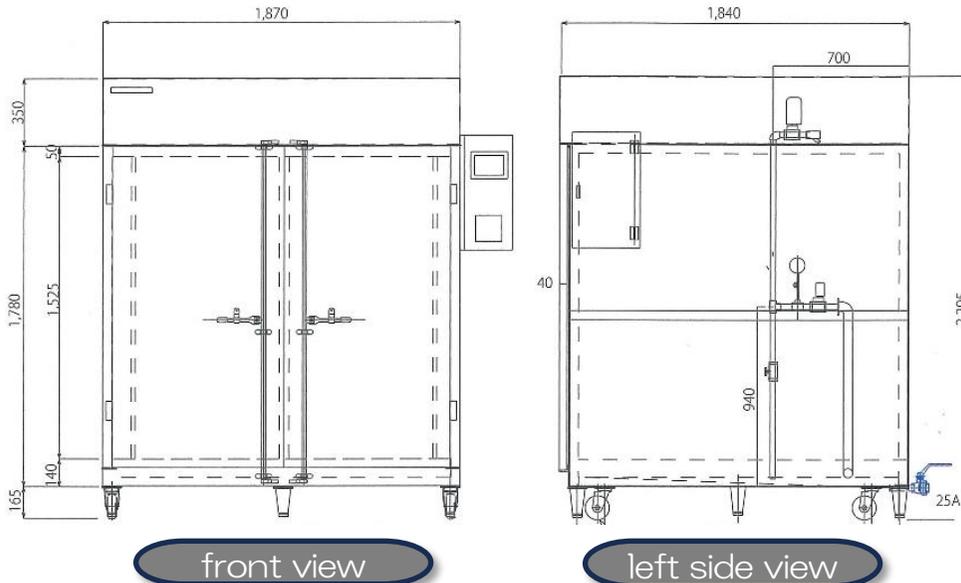
# Low-temperature high-humidity mist thaw system

# FH-600

Storage of 2 inner racks

Same control type

In a single chamber type, 288 bags of 2 kg chicken, or 576 kg, can be thawed at once. The large space inside the chamber also allows for a large amount of thawing in the kitchen, and has received favorable comments such as "easy to use" and "increased productivity due to a larger supply volume".



achievement

chicken

pork

vegetable paste

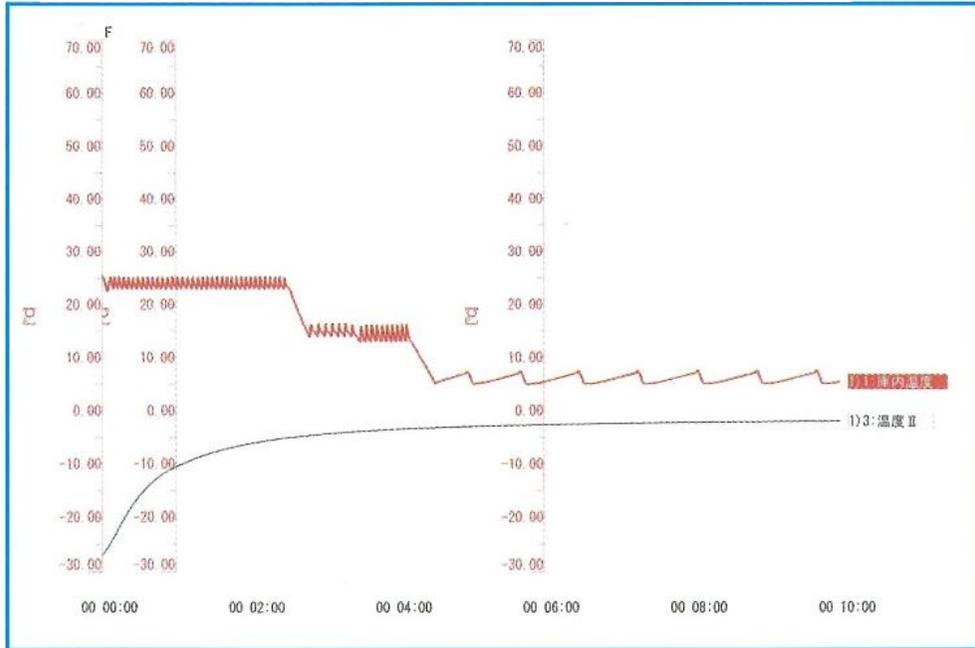
fish

shellfish

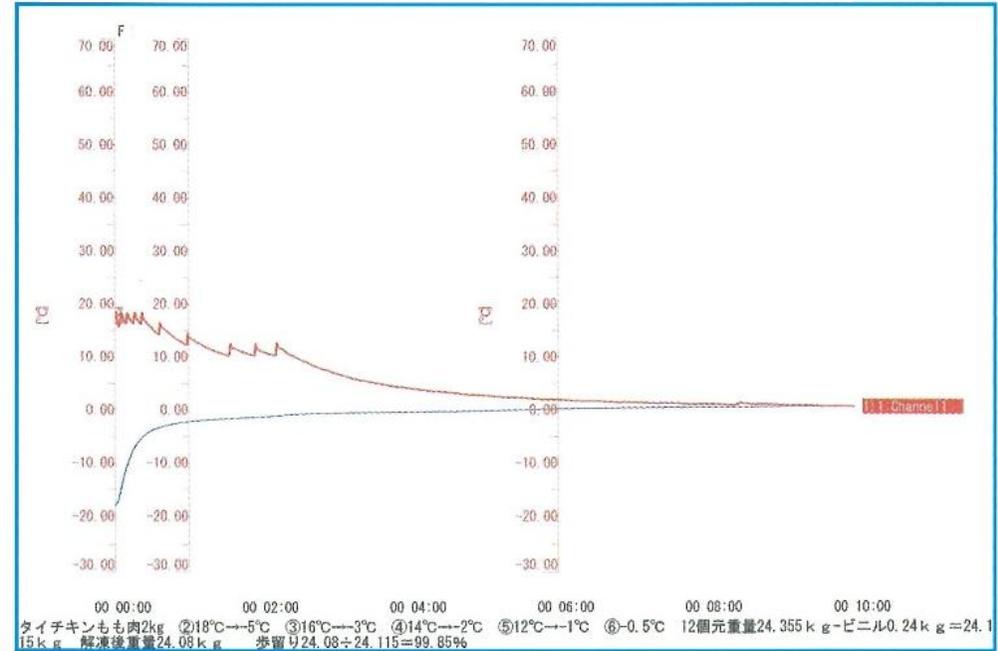
etc

# Progress during thawing

## ■ Progress during tuna thawing



## ■ Progress during chicken thawing



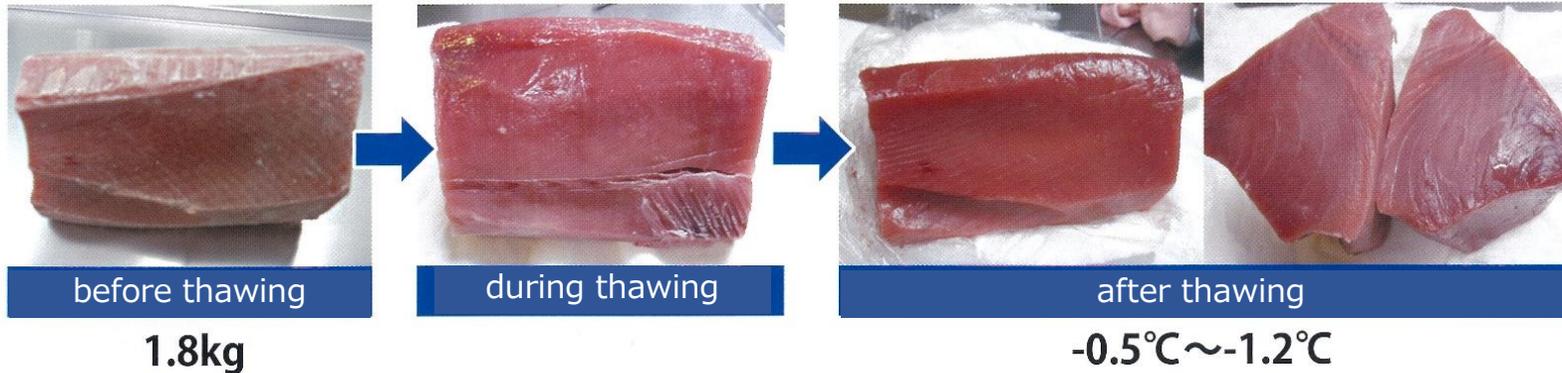
# Specifications

	<b>FH-250</b>	<b>FH-W300</b>	<b>FH-600</b>
Thawing amount	~200kg	~240kg×2 chambers	~480kg
Number of thawing rooms	One chamber type	Two chambers type	One chamber type
Size	W1400×D1000×H1943	W2170×D1840×H2320	W2170×D1840×H2295
Electricity	three phases 200V	three phases 200V	three phases 200V
Refrigerator	single phase 100V 0.6kw	three phases 200V 0.75kw	three phases 200V 1.5kw
refrigerant	R404A new refrigerant	R404A new refrigerant	R404A new refrigerant
heat media	Steam (generator not included)	Steam (generator not included)	Steam (generator not included)
ultra-violet rays	UVC steryl air	UVC steryl air	UVC steril air
Fan	SUS304 300Φ×3	SUS304 300Φ×6	SUS304 300Φ×6
Control panel	drip-proof IP65	drip-proof IP65	drip-proof IP65

# For ingredient without cell destruction (cooling of raw food), use cold thawing.

If frozen fish meat is baked as is, it will be thawed very quickly, and a large amount of drippings will occur due to cell destruction. The more firm the cells, the better the low-temperature thawing, and the more cell-destroyed (cooked), the better the rapid thawing.

## ● Thawing frozen tuna



## ● Thawing frozen pork



# UV-C germicidal lamps standard equipment

Emission of ultra-high power (254nm) ultraviolet radiant rays kills microorganisms that feed mold inside the thawing chamber, inhibiting their growth and circulating clean air.

Amount of ultraviolet light required for sterilization

- influenza virus 3,400 $\mu$  Wsec/cm<sup>2</sup>
- black mold 396,000 $\mu$  Wsec /cm<sup>2</sup>

※Ultraviolet rays required for 99.9% disinfection

## UV-C germicidal lamp

### Irradiation Intensity vs. Microorganism Killing Time

Mortality time when 61" SE type is used (estimated value)

#### Microorganism kill time on cooling coil surface

##### conditions

- distance from UV-C germicidal lamp : 30cm
- wind speed : 2.03m/秒 ● temperature : 10°C

UV irradiation intensity :  
3,557  $\mu$  W/cm<sup>2</sup>

- Influenza virus 1秒
- black mold 111秒

※Manufacturer's catalog specification: UVC kit for 1-inch Emitters" equals 9  $\mu$ W/cm<sup>2</sup> per inch (at 1 meter distance).

## UVC lamp irradiation test using agar medium



Sample taken from heat exchange coil (fin)



Sample taken from inner wall of duct



Sample exposed to circulating air for 1 minute



Sample taken from heat exchange coil (fin)



Sample taken from inner wall of duct



Sample exposed to circulating air for 1 minute

# Delivery destination



**Delivery destination...** factory (A) in the Philippines  
**Model...** FH-250

Controllers installed in the product development laboratory are labeled in English, so local staff are happy to use them.



**Delivery destination...** factory(B) in Kanto

**Model...** FH600(2 units)

Two units were delivered to thaw seasonings and soup ingredients, and later to the Fukuoka Plant.

# Delivery destination



Delivery destination... Central Kitchen Matsuyama  
(company C)

Model... FH-W300

The product was delivered to a mass retailer's processing center. This thawing machine with two chambers in one unit is well known for its ability to operate meat and fish at the same time.

Thawing laboratory

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## Contact Information

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