ETAC®

HISPEC®

High Temperature Chamber

The HISPEC series responds to your needs with a full line of machines, from temperature testing to heat treatment and drying on assembly lines.

Composed of seven classifications and forty models, ETAC's HISPEC series is the most complete series of high temperature chambers available. Thirty-four standard options make it possible to construct a high temperature chamber specification that best matches any individual use.

For instance, safety features in general are an important aspect to consider in a high temperature chamber, so depending on your individual safety requirements choices must be made. When ETAC considers aspects of safety requirments, products in ETAC's HISPEC series are developed using a multi-faceted approach, including the type of specimen (characteristics, shape), quantity of specimen, its economic value, and the purpose of the heat treatment, and moreover, the effect on the surroundings in the event of an emergency, so that a full product line has been created from which the customer can select the optimal specification.

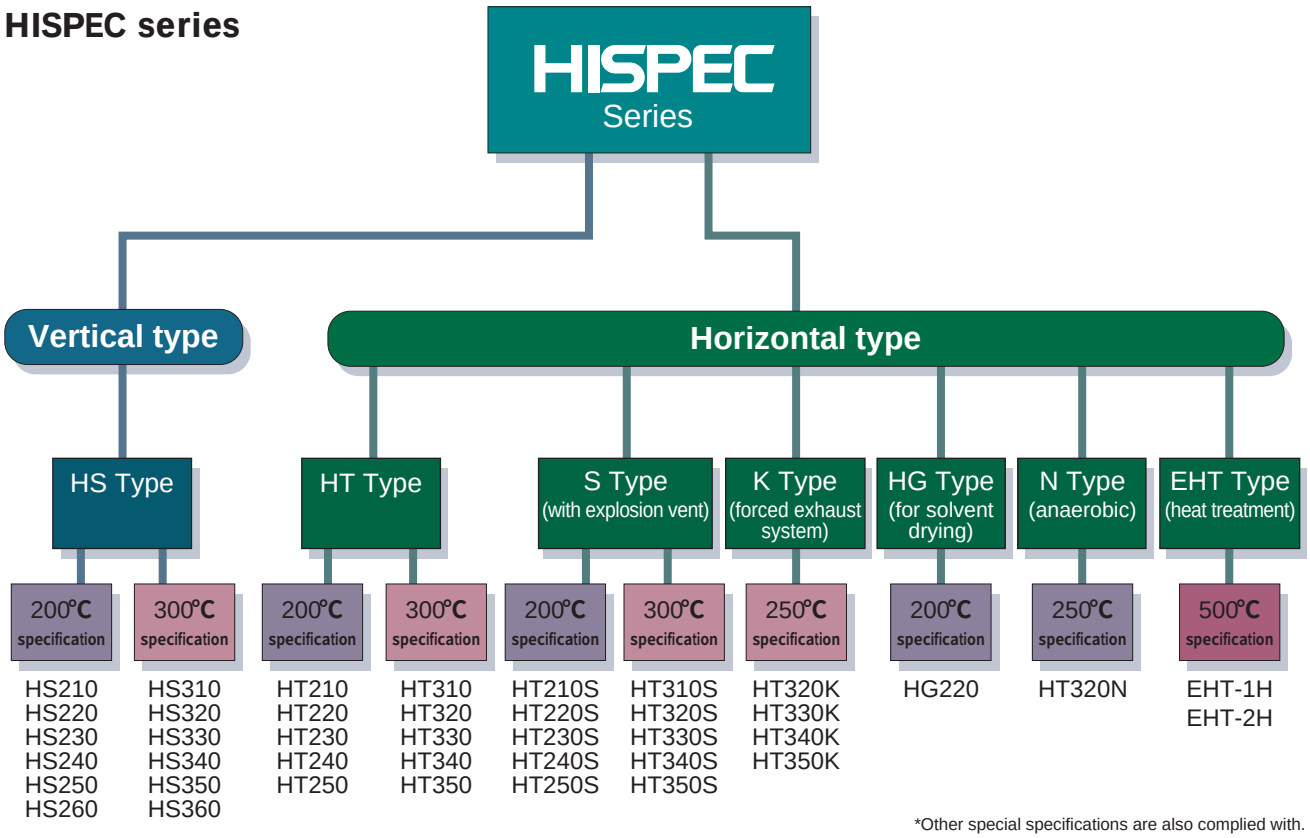
Other aspects basic to the performance of a high temperature chamber are the uniformity of temperature, and the ease of control and operation, both reproduced at a high level by the development of ETAC's original circulation method and its exclusive microcomputer controller.

Please select an ETAC high temperature chamber from the HISPEC series most in accordance with your objectives.

Before reading this catalog

ETAC's HISPEC series is composed of seven types of standard specifications and special order specifications to meet the requirements of individual users. This series even offers forty models of just standard equipment. In addition, up to seventy-two different uses are available in this high temperature chamber series when the programmable control function (option) is added.

HISPEC series



*Other special specifications are also complied with.

Type explanation

Vertical type (HS type)

HS 2 20 (P)

- **Program function (option)**
- **Indicates internal dimensions**
  - 10:W450×H600×D450mm (91Liter)
  - 20:W450×H900×D450mm (182 Liter)
  - 30:W600×H600×D600mm (216 Liter)
  - 40:W600×H900×D600mm (324 Liter)
  - 50:W600×H1200×D600mm (432 Liter)
  - 60:W800×H1200×D600mm (576 Liter)
- **Indicates maximum temperature that can actually be used**
  - 2:200℃
  - 3:300℃
- **Generic name of the vertical type HISPEC**

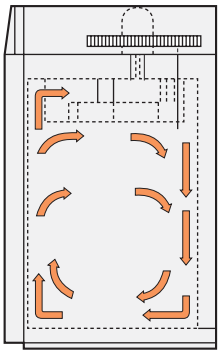
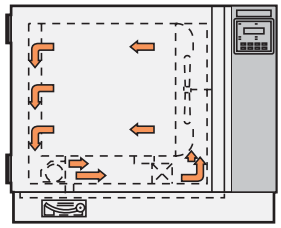
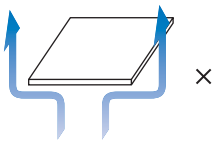
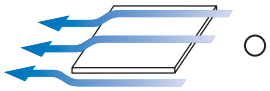
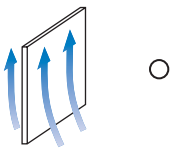
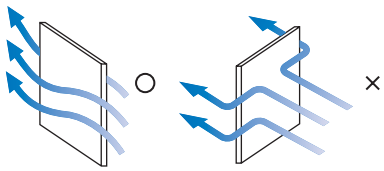
Horizontal type (HT type)

HT 3 40 (P)(S)(K)(N)

- **Anaerobic HISPEC model**
- **Forced exhaust system HISPEC model**
- **HISPEC model with explosion vent**
- **Program function (option)**
- **Indicates internal dimensions**
  - 10:W450×H450×D450mm (81Liter)
  - 20:W600×H600×D600mm (215 Liter)
  - 30:W800×H600×D600mm (384 Liter)
  - 40:W800×H1000×D800mm (640 Liter)
  - 50:W1000×H1000×D800mm (800 Liter)
- **Indicates maximum temperature that can actually be used**
  - 2:200℃
  - 3:300℃
- **Generic name of the horizontal type HISPEC**

Selecting the optimal type of chamber is an important decision.
When selecting a high temperature chamber, it is best to consider
the specimen characteristics and the purpose of use, though increasingly diverse considerations
such as the safety problems that accompany changes in the origin of the materials
and the installation space when expanding an installation,
have come into play when selecting a high temperature chamber.
Please use this list as a reference to the basic requirements when selecting a model.

Vertical / Horizontal type selection guide

<table>
<tr><th colspan="2"></th><th>Vertical type (HS type)</th><th colspan="2">Horizontal type (HT type)</th></tr>
<tr><td rowspan="4">Circulation characteristics</td><td>Wind direction</td><td> 
Perpendicular flow</td><td colspan="2"> 
Parallel flow</td></tr>
<tr><td>Wind amount</td><td>Small</td><td colspan="2">Large</td></tr>
<tr><td>Wind speed distribution</td><td>1.0〜5.0m / sec</td><td colspan="2">0.5〜2.5m / sec</td></tr>
<tr><td>Wind pressure</td><td>Large</td><td colspan="2">Small</td></tr>
<tr><td rowspan="9">Selection standards according to specimen shape - weight - quantity</td><td>Flat board shape placed horizontally</td><td>  </td><td colspan="2">  </td></tr>
<tr><td>Flat board shape placed vertically</td><td>  </td><td colspan="2">  </td></tr>
<tr><td>Fine pellets</td><td>Quantity is small ○ / Quantity is large △</td><td>Quantity is small ○</td><td>Quantity is large ×</td></tr>
<tr><td>Liquid</td><td>△</td><td>Types #10〜#20 △</td><td>Types #30〜#50 ○</td></tr>
<tr><td>Powder</td><td colspan="3">× *1)</td></tr>
<tr><td>Heavy items</td><td>○</td><td>Types #10, #20 ×</td><td>Types #30〜#50 △</td></tr>
<tr><td>Specimens that generate heat</td><td>○</td><td colspan="2">△</td></tr>
<tr><td>Specimens that generate vapor</td><td colspan="3">× *2)</td></tr>
<tr><td>Specimens that generate deposits</td><td colspan="3">× *3)</td></tr>
<tr><td rowspan="2">Installation space</td><td>Width direction</td><td>○</td><td colspan="2">×</td></tr>
<tr><td>Length direction</td><td>○</td><td colspan="2">○</td></tr>
</table>

Note 1) ○: superior △: somewhat inferior ×: unsuitable Note 2) When installation space is given greater consideration than specimen shape, please use fixtures such as the appropriate specimen holders.
*1) The vacuum oven (THERMOVAC VT type) is recommended. *2) Please use the high temperature chamber with explosion vent (HISPEC S type). Please inquire when testing specimens with even greater inflammability. *3) Please use forced exhaust system chamber (HISPEC K type).

Ease of use, safety, and high performance are the common characteristics of the HISPEC series (Vertical type/Horizontal type).

Ease of use

Display and operation panel

1 Simplifying the setting operation

(1) Interactive interaction

Since the setting items necessary for operation are displayed both sequentially and interactively by pressing the [menu] key, anyone can set it simply by inputting the corresponding setting values.

(2) Intuitive graphics

Displayed to the left of the operating panel are the setting items necessary for operation, while to the right is where the setting values are input. Both are united by the image of a plus sign that connects them. Further, the horizontally moving keys for inputting the setting values have been replaced with a more direct input feel, such as being able to directly change the numerical value of each digit by means of an [∧] key that is directly connected by a line to the LED of each digit.

(3) Simple operation

Only four kinds of keys are used for setting. Setting movements are at a minimum. High level functions have been arranged in a user friendly interface, making the method of operation naturally understood by direct use, even if there is no instruction manual.

2 Setting values are always displayed

Since the set temperature and actual operation temparature are both always displayed, the present status of operation is easily seen at a glance.

3 Easy-touch operation

The operating feeling has been exceptionally improved by means of convex operation keys, putting setting items into a menu, and a bright, easy to see digital display.

4 Enhancing the auxiliary functions

Convenience has been improved with enhanced auxiliary functions such as power failure recovery prevention, heater output monitor function, time-up output and alarm output.

When there is a power outage setting values and elapsed time are backed up and are not automatically reset. (The display panel alternately displays the set temperature and the time remaining)

Heater output When the key in position 1 is pressed during operation the heater output value at that time is displayed.

5 Stickers explaining basic operation are displayed on the equipment to account for its use by many people

The main points of the settings are listed on a sticker placed on the front surface of the door. Basic operation is possible without an instruction manual, even for persons using it for the first time.

Operation seals

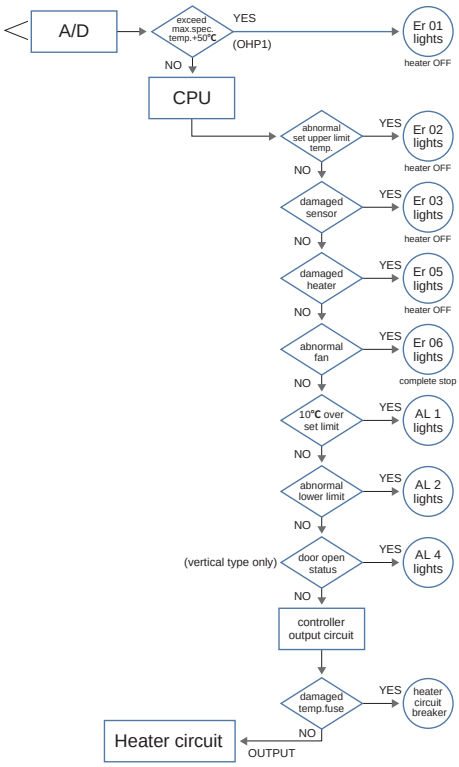
Safety

1 HISPEC's response to abnormal temperature is a three-fold protection mechanism

Response to temperature changes in the oven

Set temperature - specification temperature	Temperature change in the oven when abnormality	Response action	Display function	Protection equipment
Temperature fuse operating temp. (fixed)		Heater circuit forced interruption	Not displayed	Temperature fuse
Maximum specification temp.＋50℃(fixed)		Heater circuit OFF	Abnormal lamp + Er 01 lights + alarm sounds	Overheat protector 1 (ETACOM hardware)
Specifications maximum temp. (200℃ or 300℃)	Ex.3			
Exceeds upper limit set temp. (10℃ or higher arbitrary)	Ex.2	Heater circuit OFF	Abnormal lamp + Er 02 lights + alarm sounds	Overheat protector 2 (ETACOM software)
Exceeds set temp. by 10℃ (fixed)	Ex.1	Operation continues	AL 1 lights+ alarm sounds (intermittently)	Built in temp. controller (ETACOM)
Set temp. (arbitrary)				
Lower limit set temp. (arbitrary)		Operation continues	AL 2 lights+ alarm sounds (intermittently)	Built in temp. controller (ETACOM)
	Ex.4 Temperature does not recover	Heater circuit OFF	Abnormal lamp + Er 05 lights + alarm sounds	Built in temp. controller (ETACOM)

Abnormal detection flow chart



Temperature change example 1: Overheat protector 2 operates and it stops
Temperature change example 2: Overheat protector 2 did not work for some reason, but overheat protector 1 operates and it stops
Temperature change example 3: Overheat protectors 1 and 2 did not operate for some reason, but the temperature fuse operates and there is a complete stop
Temperature change example 4: The temperature in the oven falls abnormally and stops

Three-fold protection mechanism

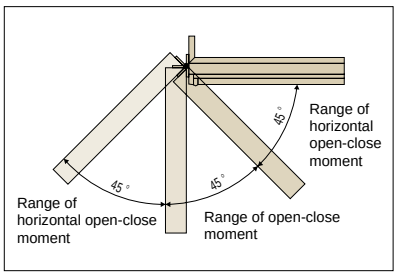
*In case of use involving heat generation due to voltage impression, etc., do not fail to use the auxiliary interlock terminal.

2 Interlock terminal comes as standard equipment

If the electricity to a specimen involving heat generation is not turned off, when the temperature is abnormal an increase in the temperature inside the oven cannot be stopped, even if the heater circuit of the high temperature chamber breaks. In the HISPEC series the interlock terminal has been made standard equipment for these occasions.

3 Anti-shut door mechanism

Previously, when putting specimens in and taking them out during high temperature operation, the open door would shut because of its dead weight and hit up against workers with the potential to cause burns. ETAC has developed an original door hinge with a cam mechanism. If the door is opened at, or more than, a specific angle, it will not close due to dead weight A high level of safety has been set.



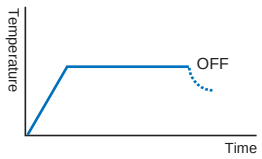
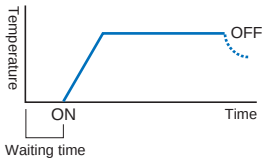
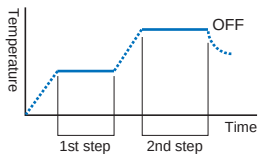
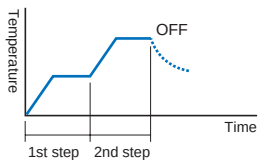
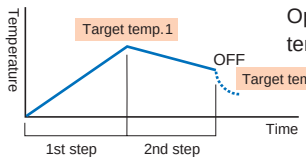
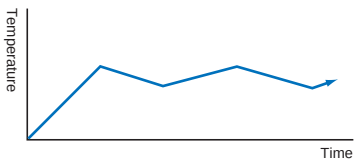
High performance-High functionality

1 Five basic operation functions are standard specifications

Besides set value operation and auto start function operation, because 2-step program operation 1 - 3 are installed as standard specifications, the operation functions have been expanded. Since these program operations have respectively been memorized, operation from the second time on is completed with one touch.

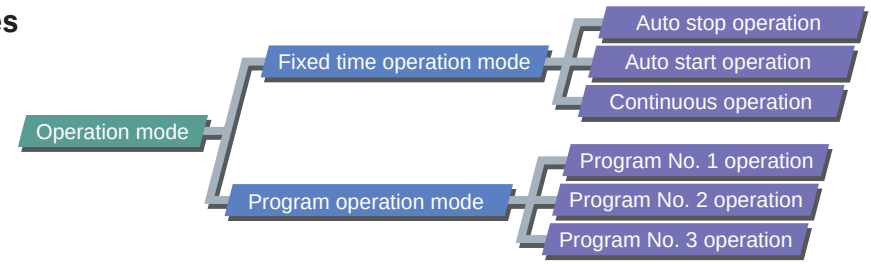
2 Overshoot prevented when the temperature rises

Highly accurate control has been made possible at all set temperatures by means of ETAC's original optimum PID value calculation system.
Furthermore, temperature control performance when the temperature has been reached has also been greatly improved and overshoot has been prevented.

Basic operation performance		Basic operation function		Repeat operation (1〜999 times)
Set operation	(1) Fixed time operation		Operates at a fixed temperature and fixed time	
	(2) Auto start and fixed time operation		After waiting a fixed time, operates at a fixed temperature, and a fixed time	
Program operation	(3) Program 1 operation		Operates at two temperatures and times (does not include the time for temperature change)	
	(4) Program 2 operation		Operates at two temperatures and times (include the time for temperature change)	
	(5) Program operation (Temperature slope control operation)		Operates at two target temperatures and temperature change times	

HISPEC series operation modes

These modes are switched among by means of the "Program operation" key on the operation panel.



Note 1) At set time [—] [—] [—] [—] it becomes continuous operation.
Note 2) The set time of each step is 0 ~ 99 hours 59 minutes. (when shipped from the factory it is possible to switch the units to 0〜 999.9 hours)
Note 3) It is possible to operate program operations (3), (4) and (5) at 1〜999 repetitions. (The number of repeat cycles repeats infinitely at [—] [—] [—]
Note 4) It is possible to use operations (1), (3), (4) and (5) and the auto start operation at the same time.
Note 5) Final set temperature holding operation (HOLD operation) is possible.

ETAC Collaboration Network
Tool box

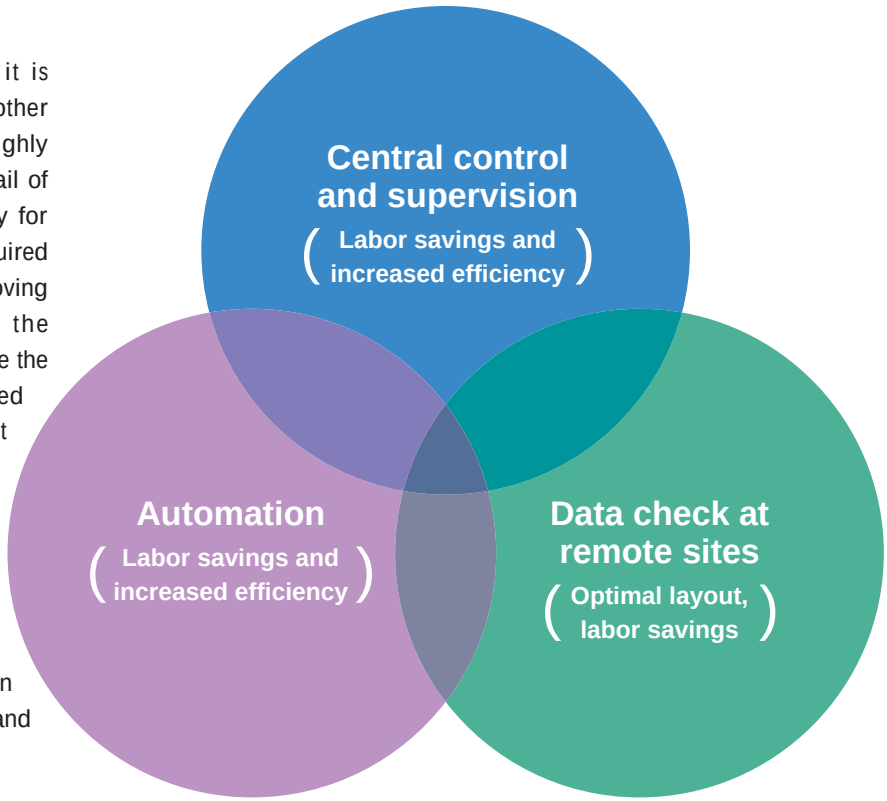
Reliability test network systems ECN Tool box

Many companies are now striving to centralize managerial resources, to take prompt countermeasures against problems, to advance technological innovation and to increase management efficiency. We believe that a networked system for reliability testing provides new solutions to these problems. With this viewpoint into mind, ETAC has developed the ECN Tool box.

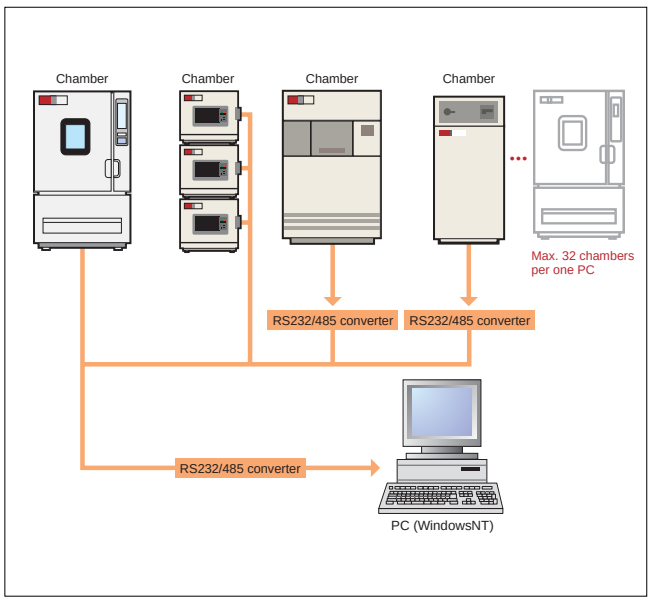
The networked system delivers a new solution.

An environmental test is very sensitive; it is susceptible to temperature, humidity and other environmental factors. To make the test highly reliable, you must pay attention to every detail of environment and operation. And, especially for devices of higher-density packaging, it is required that they continue to be tested without removing from the system, but kept as-is within the environmental test system. What's more, since the life cycle of an electronic product is reduced under environmental stress, a development engineer must check the test data every day. And moreover, test space and human resources are very important factors for management. There are many potential problems. We give you the solutions. The networked system of reliability testers is our solution. With our networked system, you can monitor and control the tests at remote sites and have solutions to the above problems.

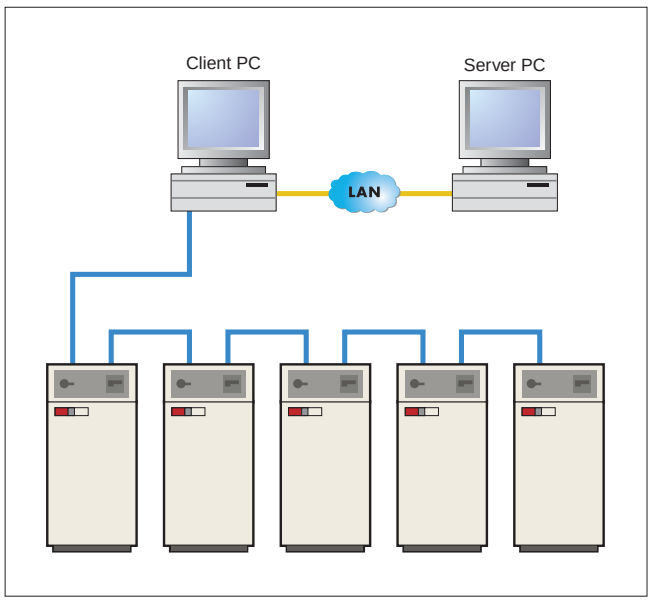
The network brings the following merits.



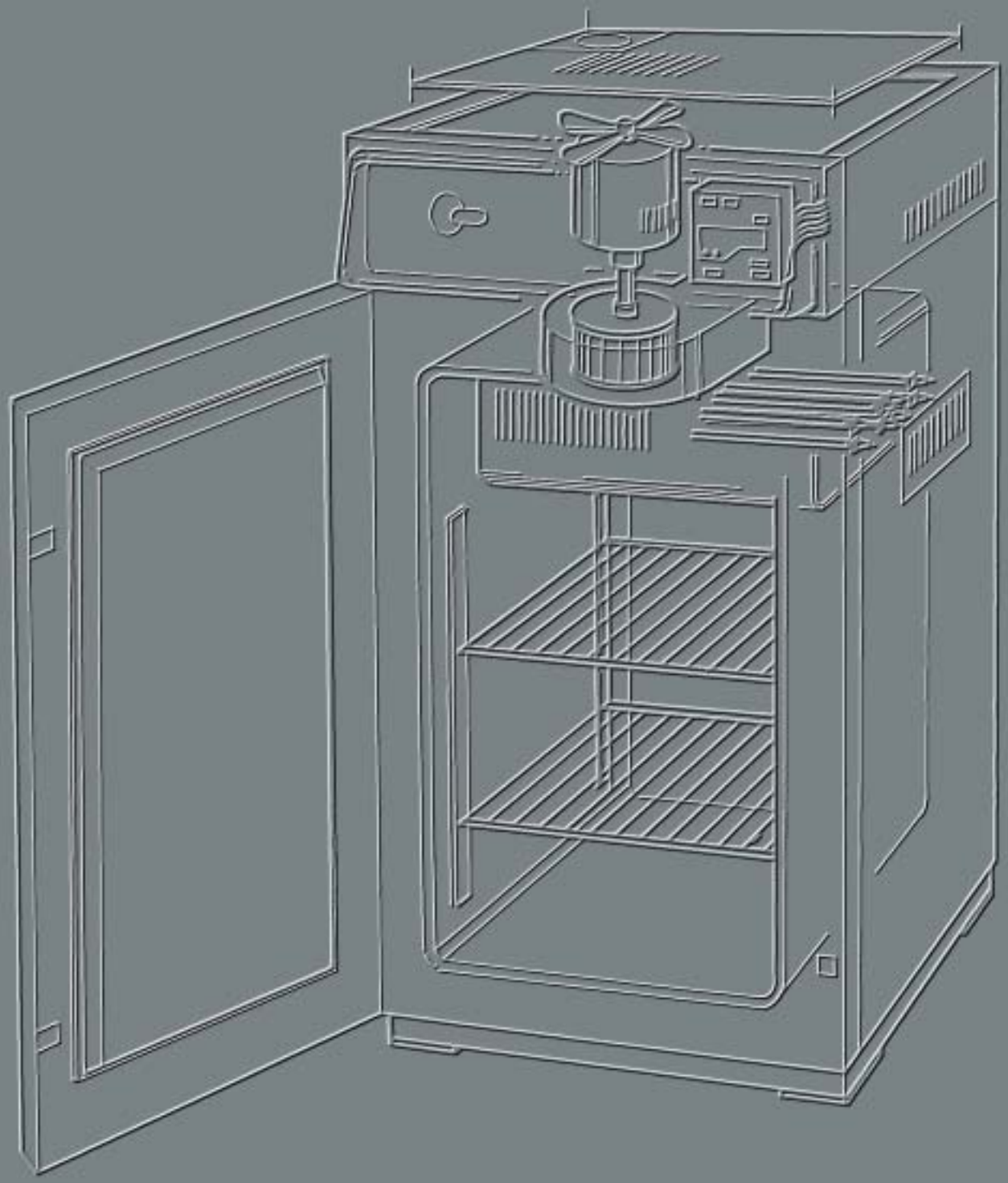
Centralized chamber control / Monitoring system



Heat treatment line consolidated management system



H S T Y P E



FEATURES

Space saving design

The main body has been constructed vertically and the air exhaust outlet placed in the ceiling, thereby saving on installation space.

Specimens are closely packed

Because of the forced circulation of hot air by means of a sirocco fan, and since circulation efficiency can be ensured even if the specimen spaces are comparatively limited, the simultaneous heat treatment of many specimens is possible.

Durable heater unit

A sheathed heater has been made standard equipment for safe and, moreover, long-term continuous use, even if still more specimens are put in.

Open door instant stop function

When the door opens during high temperature operation, the door limit switch operates, the circulation fan stops, and hot air does not blow upon the workers.

Dial type damper knob

Since the damper knob is a dial type, the degree of the damper's openness can be seen by eye and the operation touch has been greatly improved. A lock mechanism has been attached so that the degree of openness cannot be changed by mistake.

Use of a heat-proof decorative rim to protect the controller

When testing under conditions of heat treatment and drying work, the door is opened and closed even during high temperature operation. A decorative rim is used in order to prevent harmful effects on the controller due to the heat.

Specifications for Vertical Type 200℃ Series

Product name			High temperature chamber					
Type			HS210	HS220	HS230	HS240	HS250	HS260
Circulation method			Forced convection system					
Performance	Temperature range		(Ambient temperature＋20℃)～＋200℃					
	Temperature uniformity		±2.0℃ (at ＋200℃)					
	Temperature heat-up rate		Within 40 minutes (Room temperature →＋200℃)					
Controller	Control method		Microcomputer controlled temperature controller (ETACOM) / PID control method					
	Setting / display accuracy		1.0℃					
	Setting / display resolution		0.5% (F.S.)＋1℃/digit					
	Sensor		K thermocouple					
Body	External material		Cold rolled steel plate with baked coating finish					
	Internal material		Stainless steel plate (SUS304)					
	Thermal insulation materials		Glass wool					
Thermal heater			Sheathed heater					
Air transport mechanism	Electric motor		Single phase motor					
	Fan		Sirocco fan					
	Damper		Recirculation and ventilation switching is possible					
	Air exhaust outlet		ϕ89 Outside diameter at outlet					
Protection devices			Leakage breaker for power supply, Overheat protector (With ETACOM), Fan motor thermal protector, Power failure recovery prevention, Keeping function prevention with instant power failure, Warning alarm, Lower set temperature limiting alarm, Overheat protector (For upper set temperature limit), Interlock terminal, Abnormality display, Alarm for temperature exceeding the set point ＋10℃, Microcomputer self-diagnosis function (Abnormal CPU, Damaged sensor, Damaged heater, Abnormal ambient temperature, Open door alarm), Temperature fuse, Anti-shut door mechanism, Open door instant stop function					
Additional functions			Memory back-up (Approx. 5 years), Auto start, Auto stop, Program operation function (2 steps×3 patterns), Final step operation holding function					
Power supply			AC200V single phase 50 / 60Hz			AC200V three phase 50 / 60Hz		
Full load current (A)			18	18	20	15	17	18
External dimensions (W×H×Dmm)			620×1200×760	620×1500×760	770×1200×910	770×1500×910	770×1800×910	970×1800×910
Internal dimensions (W×H×Dmm)			450×600×450	450×900×450	600×600×600	600×900×600	600×1200×600	800×1200×600
Capacity (Liter)			122	182	216	324	432	576
Weight (kg)			140	145	160	185	205	275
Accessories	Operation manual		1 copy					
	Shelf	Quantity	2 shelves, 4 shelf supports					
		Minimum installation pitch (mm)	50					
		MAX. number of shelves	9	15	9	15	21	21
	Connecter		1 (Power supply for the specimen to be tested)					
	Warranty		Mailed separately					

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

Specifications for Vertical Type 300℃ Series

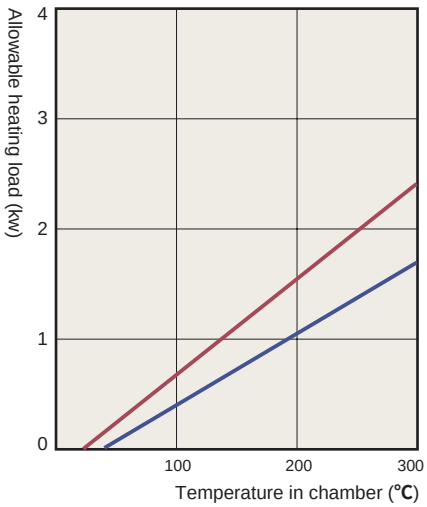
Product name			High temperature chamber					
Type			HS310	HS320	HS330	HS340	HS350	HS360
Circulation method			Forced convection system					
Performance	Temperature range		(Ambient temperature＋20℃)～＋300℃					
	Temperature uniformity		±3.0℃(at ＋300℃)					
	Temperature heat-up rate		Within 60 minutes (Room temperature→＋300℃)					
Controller	Control method		Microcomputer controlled temperature controller (ETACOM) / PID control method					
	Setting / display accuracy		1.0℃					
	Setting / display resolution		0.5% (F.S.)＋1℃/digit					
	Sensor		K thermocouple					
Body	External material		Cold rolled steel plate with baked coating finish					
	Internal material		Stainless steel plate (SUS304)					
	Thermal insulation materials		Glass wool					
Thermal heater			Sheathed heater					
Air transport mechanism	Electric motor		Single phase motor					
	Fan		Sirocco fan					
	Damper		Recirculation and ventilation switching is possible					
	Air exhaust outlet		φ89 outside diameter at outlet					
Protection devices			Leakage breaker for power supply, Overheat protector (With ETACOM), Fan motor thermal protector, Power failure recovery prevention, Keeping function prevention with instant power failure, Warning alarm, Lower set temperature limiting alarm, Overheat protector (For upper set temperature limit), Interlock terminal, Abnormality display, Alarm for temperature exceeding the set point ＋10℃, Microcomputer self-diagnosis function (Abnormal CPU, Damaged sensor, Damaged heater, Abnormal ambient temperature, Open door alarm), Temperature fuse, Anti-shut door mechanism, Open door instant stop function					
Additional functions			Memory back-up (Approx. 5 years), Auto start, Auto stop, Program operation function (2 steps×3 patterns), Final step operation holding function					
Power supply			AC200V single phase 50 / 60Hz			AC200V three phase 50 / 60Hz		
Full load current (A)			18	20	20	17	19	21
External dimensions (W×H×Dmm)			620×1200×760	620×1500×760	770×1200×910	770×1500×910	770×1800×910	970×1800×910
Internal dimensions (W×H×Dmm)			450×600×450	450×900×450	600×600×600	600×900×600	600×1200×600	800×1200×600
Capacity (Liter)			122	182	216	324	432	576
Weight (kg)			140	145	160	185	205	275
Accessories	Operation manual		1 copy					
	Shelf	Quantity	2 shelves, 4 shelf supports					
		Minimum installation pitch (mm)	50					
		MAX. number of shelves	9	15	9	15	21	21
	Connecter		1 (Power supply for the specimen to be tested)					
	Warranty		Mailed separately					

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

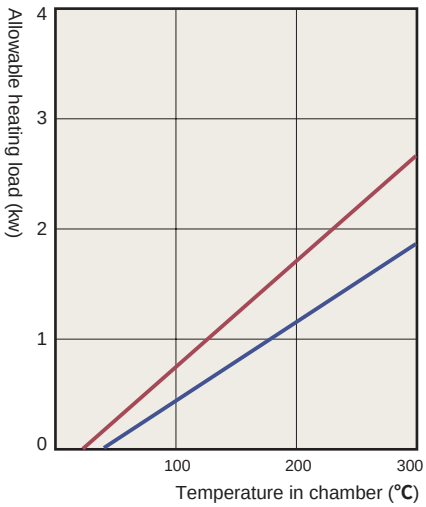
Allowable heating load

When damper is fully open
When damper is fully closed

HS210/HS310

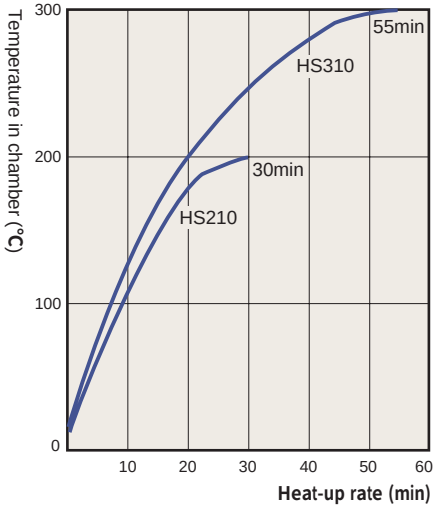


HS220/HS320

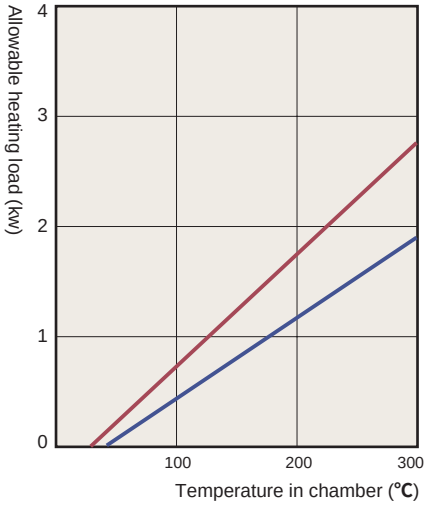


Temperature heat-up rate

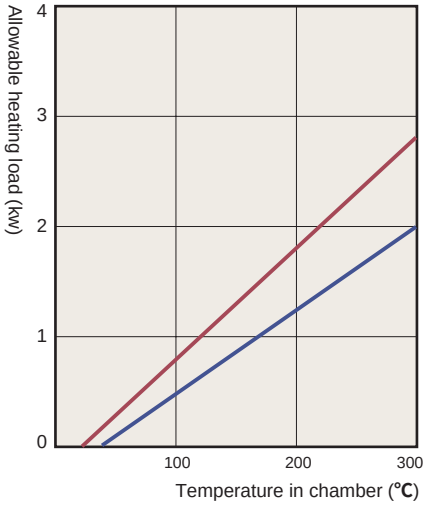
HS210/HS310



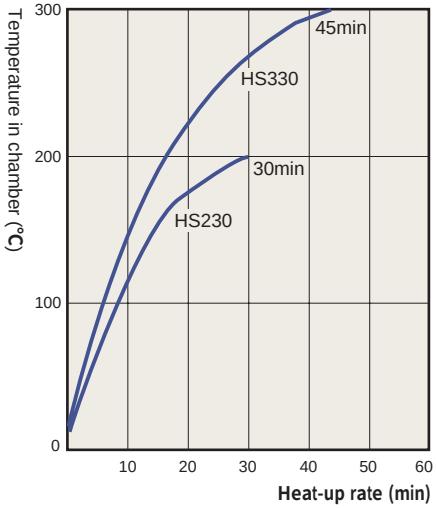
HS230/HS330



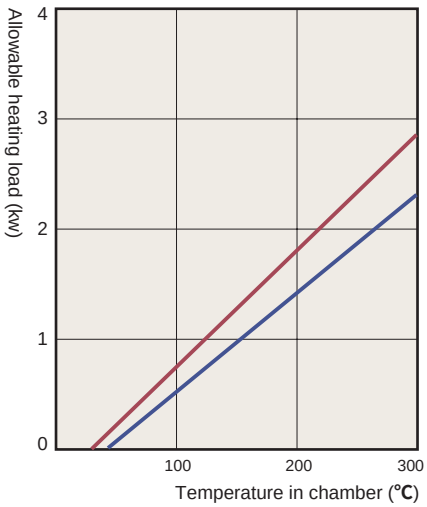
HS240/HS340



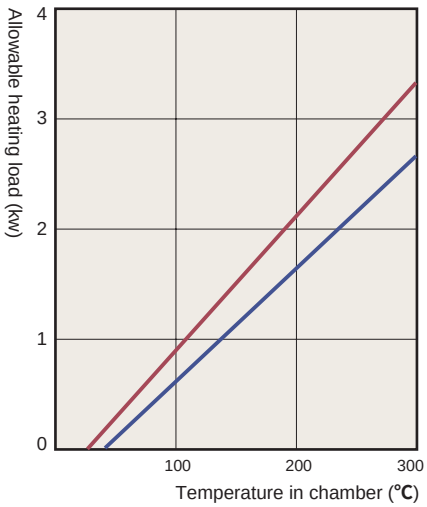
HS230/HS330



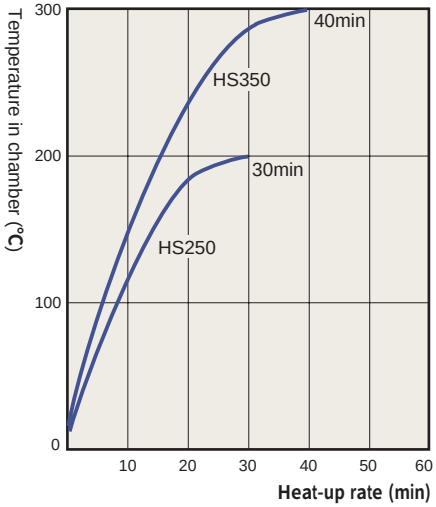
HS250/HS350



HS260/HS360



HS250/HS360



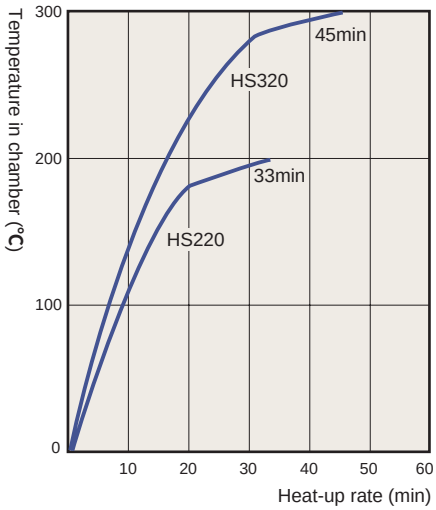
Note 1) Measurement conditions / ambient temperature: ＋20℃±3℃, Power source: 200V, 50Hz
Note 2) The values set forth in this data are representative values, there is some scattering depending upon the equipment.

Temperature dropping rate

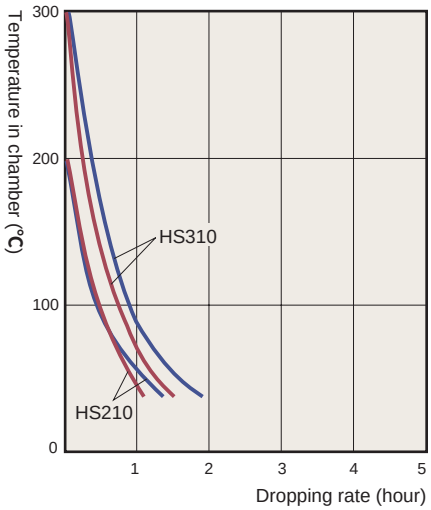
When air exhaust outlet is fully opened

When air exhaust outlet is fully closed

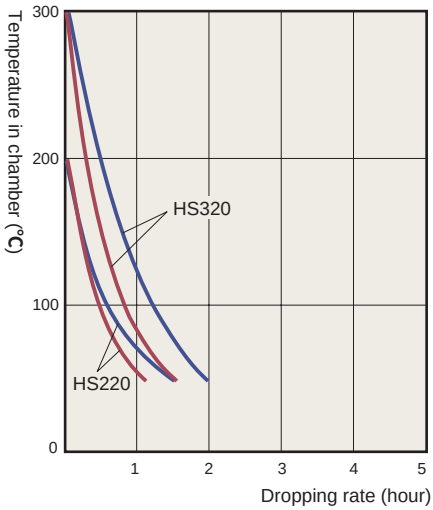
HS220/HS320



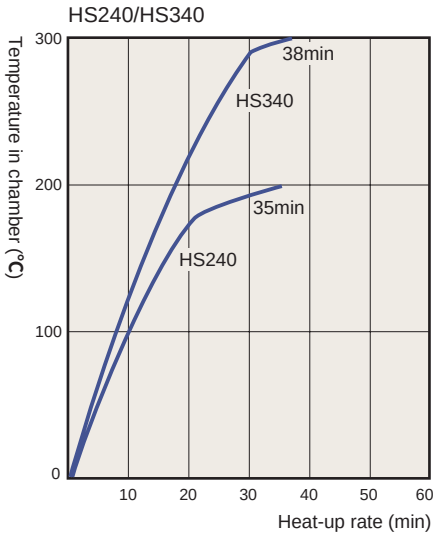
HS210/HS310



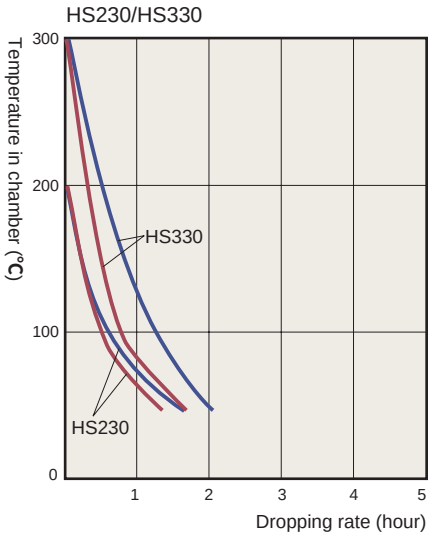
HS220/HS320



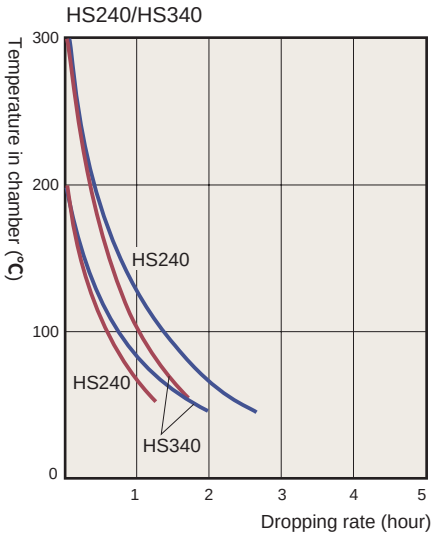
HS240/HS340



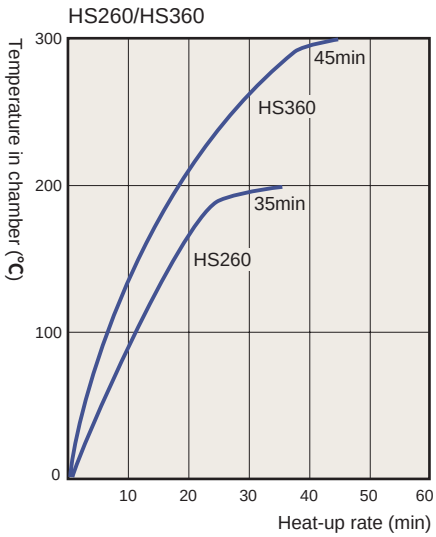
HS230/HS330



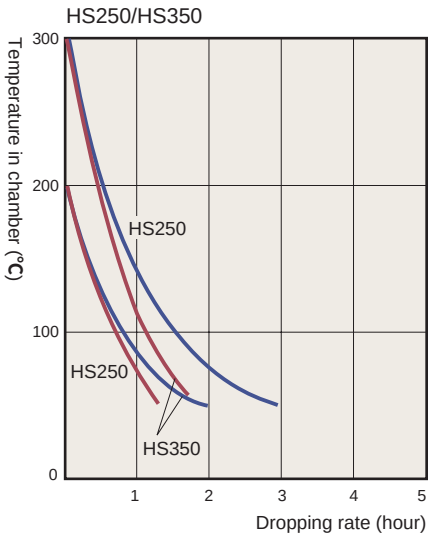
HS240/HS340



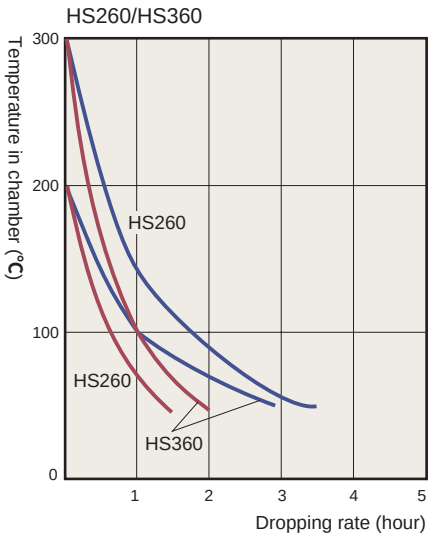
HS260/HS360



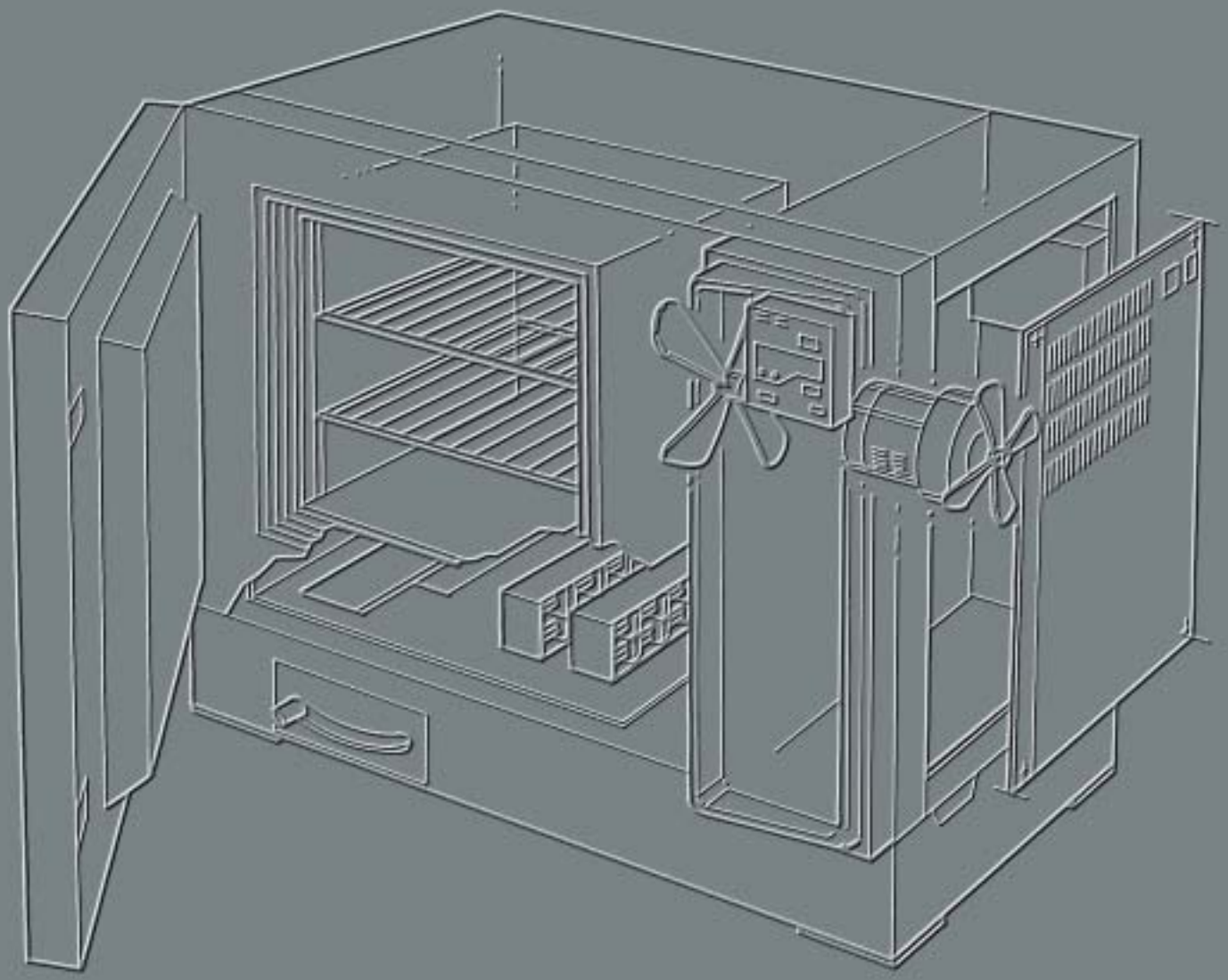
HS250/HS350



HS260/HS360



H T T Y P E



FEATURES

Overshoot is prevented!

Please take note of the highly accurate temperature uniformity performance
Circulation performance has been improved with a large wind volume propeller fan in addition to an interior structure that makes use of many years of chamber technology. Superior temperature uniformity (of ±1.5℃ in #30 type and above it is ±2.0℃) and stable performance is reproduced.

Modular heater unit

This is an ETAC original heater unit designed with great importance given to hot wind circulation efficiency. With the goal of having common ground with other models, cost reduction and the standardization of the assembly process have been realized.

Functions can be switched to suit the purpose

By switching the ventilation dampers on the lower or upper left of the main body, the proper use of the front hot wind circulation function and the one-way hot wind exhaust air function is possible. Please operate in accordance with your requirements and the characteristics of the specimens.

Simple maintenance zone

In order to achieve trouble free long-term operation the number of parts have been reduced. As a result, the number of parts that require maintenance has been significantly reduced while greatly improving the overall reliability of the equipment.

Specifications for Horizontal Type 200℃ Series

Product name			High temperature chamber				
Type			HT210	HT220	HT230	HT240	HT250
Circulation method			Forced convection system				
Performance	Temperature range		(Ambient temperature＋20℃)～＋200℃				
	Temperature uniformity		±1.5℃ (at ＋200℃)		±2.0℃ (at ＋200℃)		
	Temperature heat-up rate		Within 40 minutes (Room temperature→＋200℃)		Within 45 minutes (Room temperature→＋200℃)		
Controller	Control method		Microcomputer controlled temperature controller (ETACOM) / PID control method				
	Setting / display accuracy		1.0℃				
	Setting / display resolution		0.5% (F.S.)＋1℃/digit				
	Sensor		K thermocouple				
Body	External material		Cold rolled steel plate with baked coating finish				
	Internal material		Stainless steel plate (SUS304)				
	Thermal insulation materials		Glass wool				
Thermal heater			Nichrome strip wire heater				
Air transport mechanism	Electric motor		Single phase motor				
	Fan		Propeller fan				
	Damper		Recirculation and ventilation switching is possible				
	Air exhaust outlet		ϕ82				
Protection devices			Leakage breaker for power supply, Overheat protector (With ETACOM), Fan motor thermal protector, Power failure recovery prevention, Keeping function prevention with instant power failure, Warning alarm, Lower set temperature limit alarm, Overheat protector (For upper set temperature limit), Interlock terminal, Abnormality display, Alarm for temperature exceeding the set point ＋10℃, Microcomputer self-diagnosis function (Abnormal CPU, Damaged sensor, Damaged heater, Abnormal ambient temperature), Temperature fuse, Anti-shut door mechanism				
Additional functions			Memory back-up (Approx. 5 years), Auto start, Auto stop, Program operation function (2 steps×3 patterns), Final step operation holding function				
Power supply			AC200V single phase 50 / 60Hz		AC200V three phase 50 / 60Hz		
Full load current (A)			10	13	11	14	17
External dimensions (W×H×Dmm)			1040×820×675	1190×970×825	1460×1265×835	1460×1465×1035	1660×1465×1035
Internal dimensions (W×H×Dmm)			450×450×450	600×600×600	800×800×600	800×1000×800	1000×1000×800
Capacity (Liter)			91	216	384	640	800
Weight (kg)			85	120	220	280	300
Accessories	Operation manual		1 copy				
	Shelf	Quantity	2 shelves, 4 shelf supports				
		Minimum installation pitch (mm)	50				
		MAX. number of shelves	8	11	15	19	19
	Connecter		1 unit (Power supply for the specimen to be tested)				
	Power supply cord		Three core captire cord (with grounding strip) 2m		Not included		
	Warranty		Mailed separately				

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

Specifications for Horizontal Type 300℃ Series

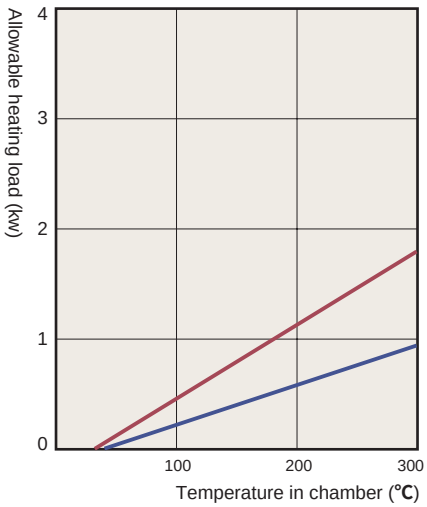
Product name			High temperature chamber				
Type			HT310	HT320	HT330	HT340	HT350
Circulation method			Forced convection system				
Performance	Temperature range		(Ambient temperature＋20℃)～＋300℃				
	Temperature uniformity		±2.5℃ (at ＋300℃)		±3.0℃ (at ＋300℃)		
	Temperature heat-up rate		Within 50 minutes (Room temperature→＋300℃)		Within 60 minutes (Room temperature→＋300℃)		
Controller	Control method		Microcomputer controlled temperature controller (ETACOM) / PID control method				
	Setting / display accuracy		1.0℃				
	Setting / display resolution		0.5% (F.S.)＋1℃/digit				
	Sensor		K thermocouple				
Body	External material		Cold rolled steel plate with baked coating finish				
	Internal material		Stainless steel plate (SUS304)				
	Thermal insulation materials		Glass wool				
Thermal heater			Nichrome strip wire heater				
Air transport mechanism	Electric motor		Single phase motor				
	Fan		Propeller fan				
	Damper		Recirculation and ventilation switching is possible				
	Air exhaust outlet		φ82				
Protection devices			Leakage breaker for power supply, Overheat protector (With ETACOM), Fan motor thermal protector, Power failure recovery prevention, Keeping function prevention with instant power failure, Warning alarm, Lower set temperature limit alarm, Overheat protector (For upper set temperature limit), Interlock terminal, Abnormality display, Alarm for temperature exceeding the set point ＋10℃, Microcomputer self-diagnosis function (Abnormal CPU, Damaged sensor, Damaged heater, Abnormal ambient temperature), Temperature fuse, Anti-shut door mechanism				
Additional functions			Memory back-up (Approx. 5 years), Auto start, Auto stop, Program operation function (2 steps×3 patterns), Final step operation holding function				
Power supply			AC200V single phase 50 / 60Hz		AC200V three phase 50 / 60Hz		
Full load current (A)			16	16	14	17	19
External dimensions (W×H×Dmm)			1040×820×675	1190×970×825	1460×1265×835	1460×1465×1035	1660×1465×1035
Internal dimensions (W×H×Dmm)			450×450×450	600×600×600	800×800×600	800×1000×800	1000×1000×800
Capacity (Liter)			91	216	384	640	800
Weight (kg)			85	120	210	280	300
Accessories	Operation manual		1 copy				
	Shelf	Quantity	2 shelves, 4 shelf supports				
		Minimum installation pitch (mm)	50				
		MAX. number of shelves	8	11	15	19	19
	Connecter		1 unit (Power supply for the specimen to be tested)				
	Power supply cord		Three core captire cord (with grounding strip) 2m		Not included		
	Warranty		Mailed separately				

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

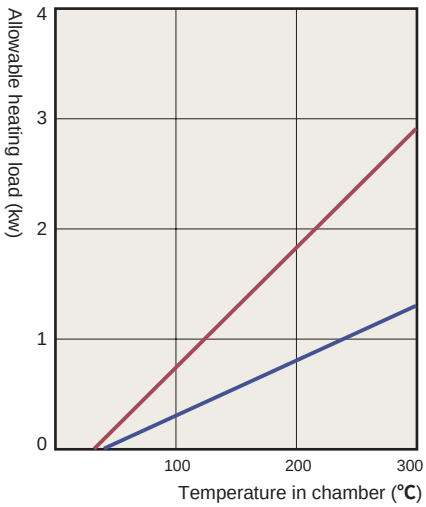
Allowable heating load

When damper is fully open
When damper is fully closed

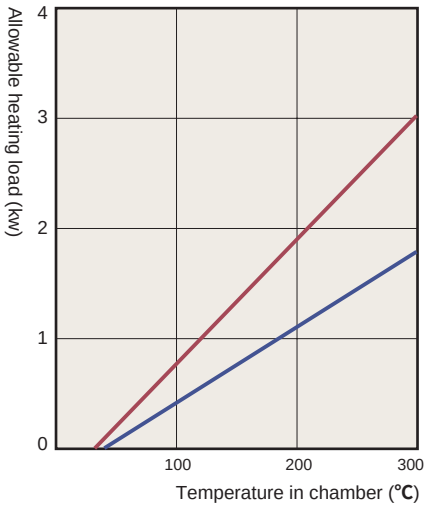
HT210/HT310



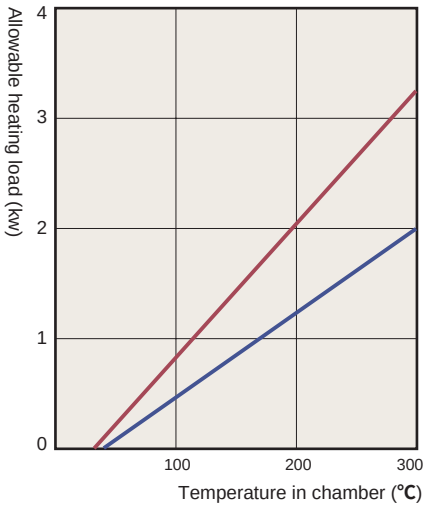
HT220/HT320



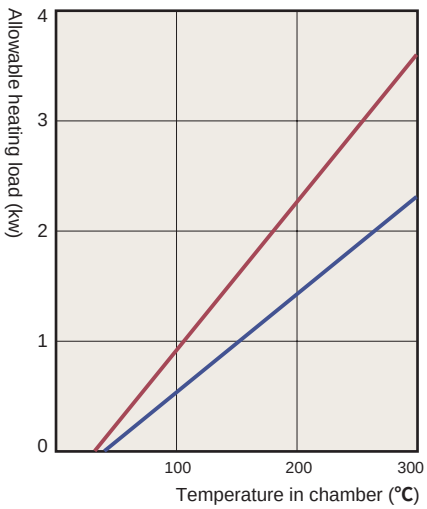
HT230/HS330



HT240/HT340

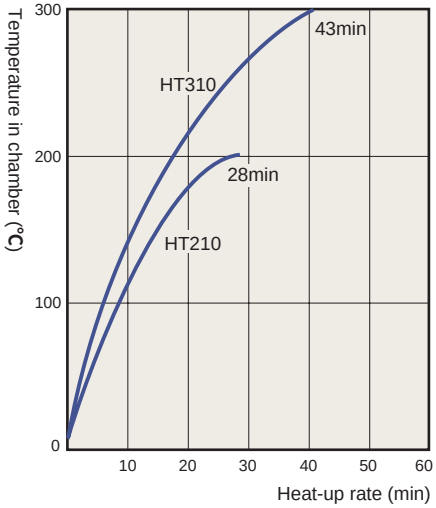


HT250/HT350

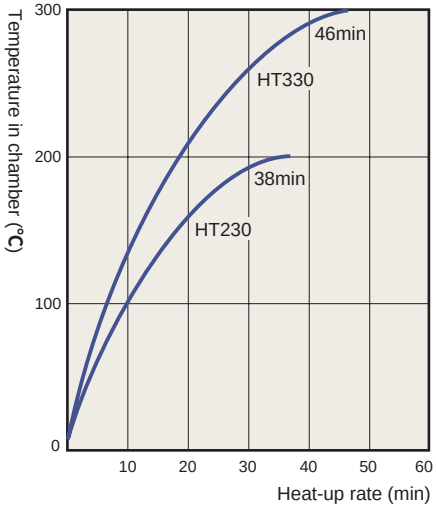


Temperature heat-up rate

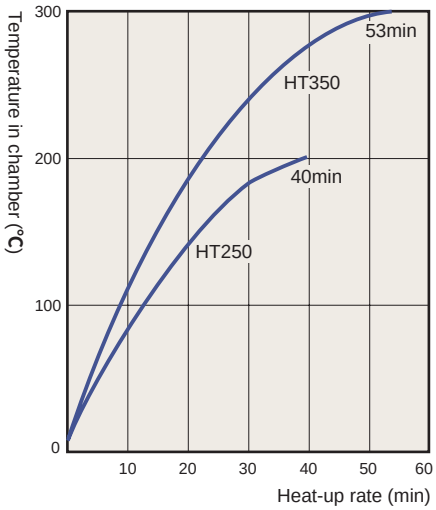
HT210/HT310



HT230/HT330



HT250/HT350



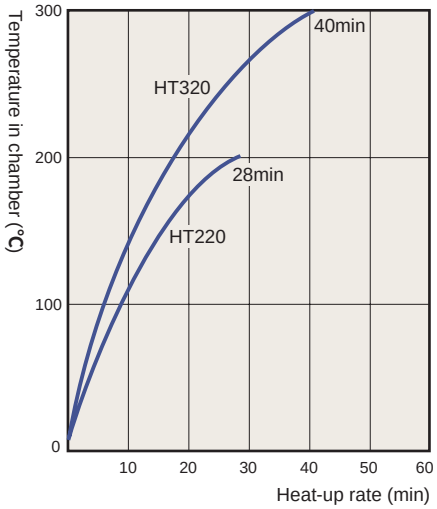
Note 1) Measurement conditions / ambient temperature: ＋20℃±3℃, Power source: 200V, 50Hz
Note 2) The values set forth in this data are representative values, there is some scattering depending upon the equipment.

Temperature dropping rate

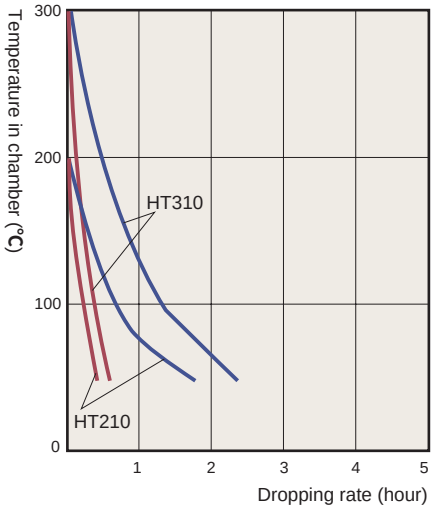
When air exhaust outlet is fully opened

When air exhaust outlet is fully closed

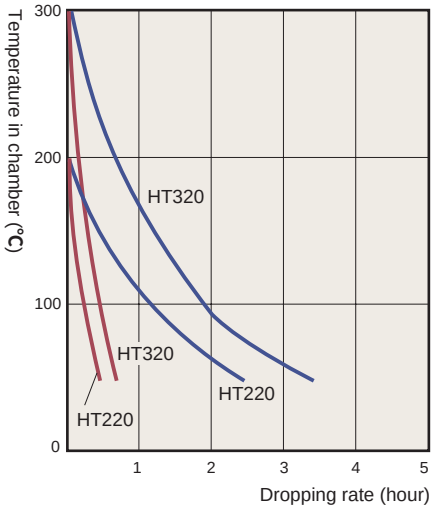
HT220/HT320



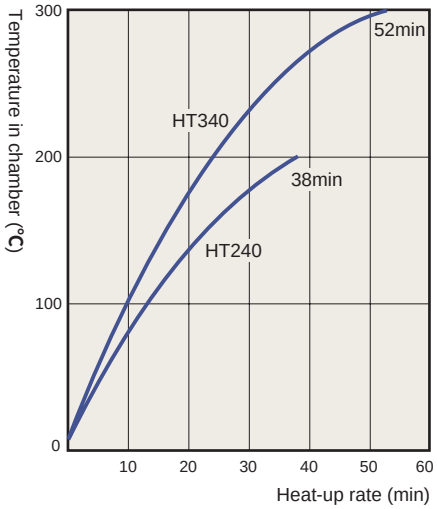
HT210/HT310



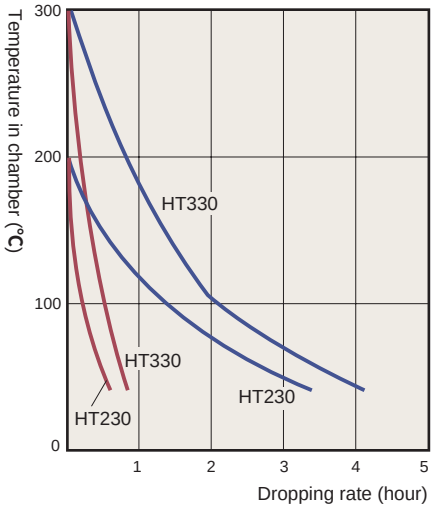
HT220/HT320



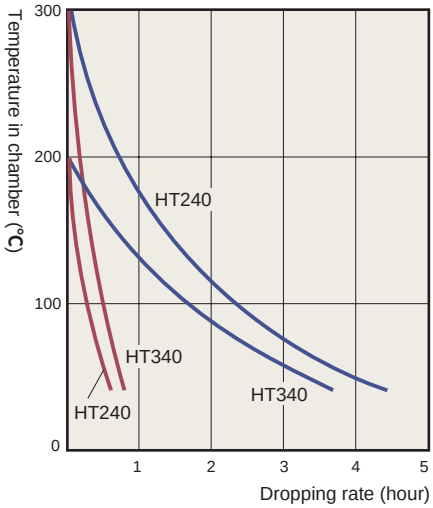
HT240/HT340



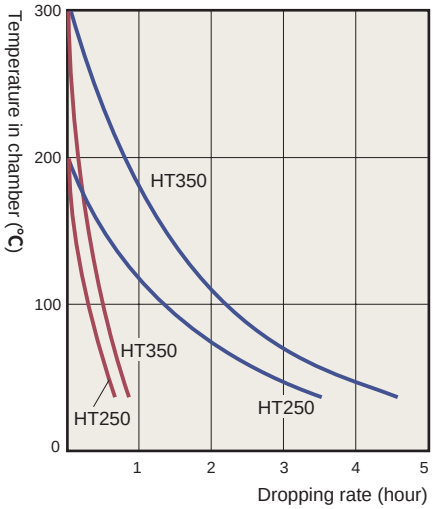
HT230/HT330



HT240/HT340



HT250/HT350



S TYPE

With explosion vent.

Please use the S-Type high temperature chamber with explosion vent while testing specimens that generate volatile gas (vapor) during heat treatment or drying. The S-Type can be used when for some reason an explosion has occurred inside the chamber since it has an explosion pressure relief vent that allows the explosion pressure to escape towards the ceiling. However, as it cannot be used when a large volume of inflammable vapor is generated, please be careful.

*Please inquire about our products that can be used even with specimens that are inflammable.

Vents that completely discharge explosion pressure are provided

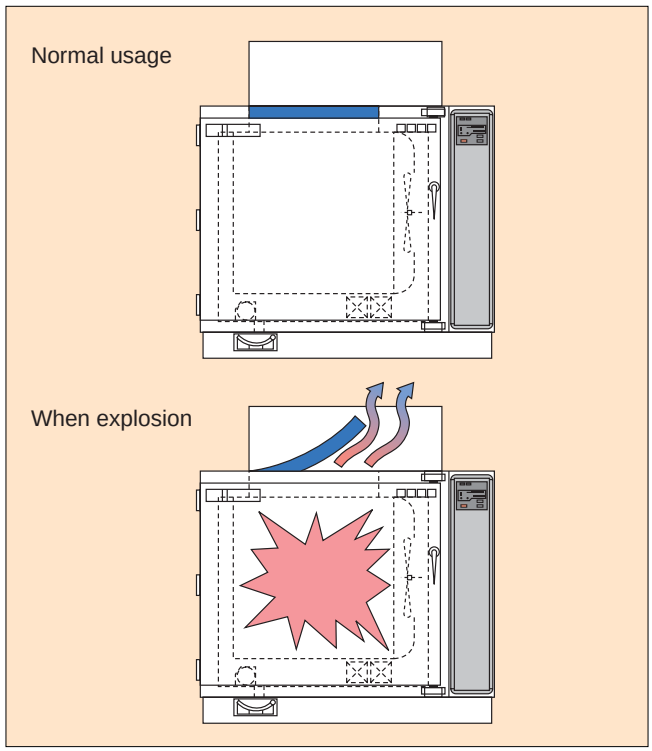
A pressure relief opening (vent) is provided in the ceiling. Consequently, explossion pressurue is discharged even if an explosion should accidentally occur inside the chamber.

The vent exhaust is at a height of 1.8 meters or more

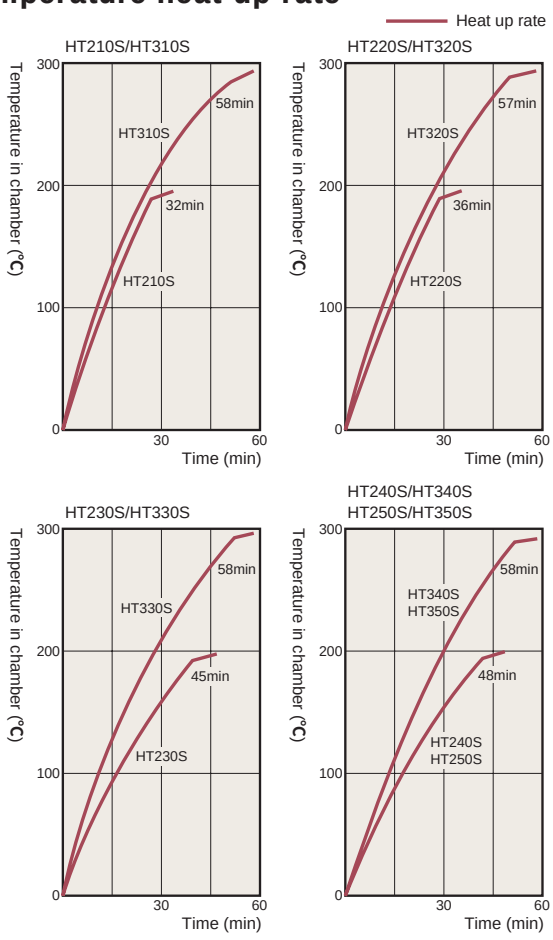
So that workers are absolutely not affected, a door opening and closing lock mechanism that has sufficient strength, and is easy to open and close,has been adopted. Further, the vent has been securely covered from the surface of the floor up to a height of 1.8 meters. (1.8 meters including the rack of options #10S, #20S, #30S)

Operability at the same standard as HISPEC

From temperature setting to the start of operation, the easy touch operation and easy to understand operation procedure (see page 5) are features in common with the ETAC HISPEC.



Temperature heat-up rate



Note 1) Measurement conditions / ambient temperature: +20℃±3℃, Load inside chamber: none, Power: 200V, 50Hz
Note 2) The values set forth in this data are representative values, there is some scattering depending upon the equipment.

Specifications for Type S with Explosion Vent

Product name			With explosion vent									
Type			HT210S	HT220S	HT230S	HT240S	HT250S	HT310S	HT320S	HT330S	HT340S	HT350S
Circulation method			Forced convection system									
Performance	Temperature range		(Ambient temp.＋20℃)～＋200℃					(Ambient temp.＋20℃)～＋300℃				
	Temperature uniformity		±1.5℃ (at ＋200℃)		±3.0℃ (at ＋200℃)			±2.5℃ (at ＋300℃)		±4.0℃ (at ＋300℃)		
	Temperature heat-up rate		Within 40min. (Room temp.→＋200℃)		Within 50min. (Room temp.→＋200℃)			Within 50min. (Room temp. →＋300℃)	Within 60min. (Room temp.→＋300℃)			
Controller	Control method		Microcomputer controlled temperature controller (ETACOM) / PID control method									
	Setting / display accuracy		1.0℃									
	Setting / display resolution		0.5% (F.S)＋1℃/digit									
	Sensor		K thermocouple									
Body	External material		Cold rolled steel plate with baked coating finish									
	Internal material		Stainless steel plate (SUS304)									
	Thermal insulation materials		Glass wool									
Thermal heater			Sheathed heater									
Air transport mechanism	Electric motor		Single phase motor									
	Fan		Propeller fan									
	Damper		Recirculation and ventilation switching is possible									
	Air exhaust outlet		φ82									
Protection devices			Leakage breaker for power supply, Overheat protector (With ETACOM), Fan motor thermal protector, Power failure recovery prevention, Keeping function prevention with instant power failure, Warning alarm, Interlock terminal, Abnormality display, Alarm for temperature exceeding the set point ＋10℃, Overheat protector (For upper set temperature limit), Microcomputer self-diagnosis function (Abnormal CPU, Damaged sensor, Damaged heater, Abnormal ambient temperature), Temperature fuse, Explosion vent									
Additional functions			Memory back-Up (Approx. 5 years), Auto start, Auto stop, Program operation function (2 steps×3 patterns), Final step operation holding function									
Power supply			AC200V single phase50/60HZ		AC200V three phase50 / 60HZ			AC200V single phase50/60HZ		AC200V three phase50 / 60HZ		
Full load current (A)			10	13	11	14	17	15	15	14	17	19
External dimensions (W×H×Dmm)			1040×1260×710	1190×1260×860	1460×1595×890	1460×1815×1090	1660×1895×1090	1040×1260×710	1190×1260×860	1460×1595×890	1460×1895×1090	1660×1895×1090
Internal dimensions (W×H×Dmm)			450×450×450	600×600×600	800×800×600	800×1000×800	1000×1000×800	450×450×450	600×600×600	800×800×600	800×1000×800	1000×1000×800
Capacity (Liter)			91	216	384	640	800	91	216	334	640	800
Weight (kg)			90	125	220	290	310	90	125	220	290	310
Accessories	Operation manual		1 copy									
	Shelf	Quantity	2 shelves, 4 shelf supports									
		Minimum installation pitch (mm)	50									
		MAX. number of shelves	8	11	15	19	19	8	11	15	19	19
	Matelial of vent		1 set									
	Connecter		1 unit (Power supply for the specimen to be tested)									
	Power supply cord		Three core captire cord (With grounding strip) 2m		—			Three core captire cord (With grounding strip) 2m		—		
	Warranty		Mailed separately					Mailed separately				

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

K TYPE

Forced hot air exhaust.

The K-Type forced hot air exhaust high temperature chamber is a high temperature chamber developed as a heat treatment container for the secondary curing that is exemplified by silicon rubber. Curing with a good yield can be carried out with a perfect one-way air exhaust system that efficiently discharges to the outside of the chamber the deposits that occur during curing. Please use carefully, taking into consideration the quantity of items being heat treated and the dimensions of the chamber interior.

Deposits that occur during curing are discharged to the outside

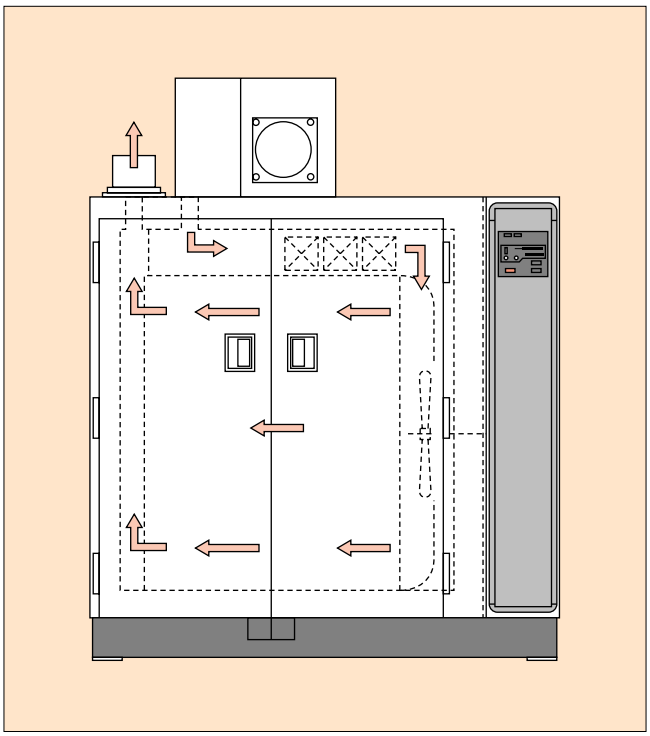
This equipment carries out secondary curing exclusively discharging deposits to the outside and increasing circulation efficiency by means of a strong circulator for sucking in fresh air.

Highly functional hinged double doors

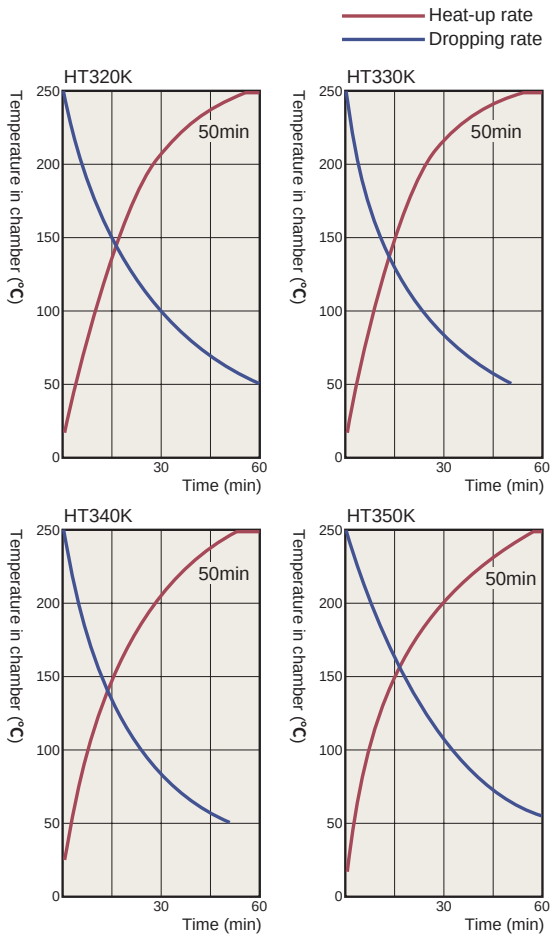
Hinged double doors have been made standard equipment because they reduce the lowering of the temperature inside the chamber caused by the opening and closing of the door and increase the productivity of heat treatment work. Of course, the door rotation radius also is halved.

Auto start/auto stop functions have become standard

Due to the development of a new controller, the auto start/auto stop functions have been enhanced and manual operation in order to cure has become completely unnecessary. Because the initial condition settings are stored in memory, the work can be completed with one touch operation.



Temperature heat-up&dropping rate



Specifications for
Type K
with Forced Hot Air Exhaust

Product name			Forced hot air exhaust			
Type			HT320K	HT330 K	HT340K	HT350K
Performance	Temperature range		(Ambient temperature＋20℃)～＋250℃			
	Temperature uniformity		±5.0℃ (at ＋250℃)			
	Temperature heat-up rate		Within 60 minutes (Room temperature→＋250℃)			
Controller	Control method		Microcomputer controlled temperature controller (ETACOM) / PID control method			
	Setting / display resolution		1.0℃			
	Setting / display accuracy		0.5% (F.S)＋1℃/digit			
	Sensor		K thermocouple			
Body	External material		Cold rolled steel plate with baked coating finish			
	Internal material		Stainless steel plate (SUS304)			
	Insulation material		Glass wool			
	Doors		Hinged single door	Hinged double door		
Thermal heater			Nichrome strip wire heater			
Air transport mechanism	Electric motor		Single phase motor			
	Fan		Propeller fan			
	Intake blower		Sirocco Fan with motor			
	Small blower		Motor shaft cooling blower			
	Air exhaust outlet		Ceiling section ϕ100	Ceiling section ϕ120		
Protection devices			Leakage breaker for power supply, Overheat protector (With ETACOM), Fan motor thermal protector, Power failure recovery prevention, Keeping function prevention with instant power failure, Warning alarm, Interlock terminal, Abnormality display, Alarm for temperature exceeding the set point＋10℃, Overheat protector (For upper set temperature limit), Microcomputer self-diagnosis function (Abnormal CPU, Damaged sensor, Damaged heater, Abnormal ambient temperature), Temperature fuse, Door mechanisim for accidentally closing			
Additional functions			Memory back-Up (Approx. 5 years), Auto start, Auto stop, Operation function (2 steps×3 patterns), Final step operation holding function, Wait function			
Power supply			AC200V single phase 50/60Hz	AC200V three phase 50 / 60Hz		
Full load current (A)			19	23	28	28
External dimensions (W×H×Dmm)			1190×1645×825	1460×1960×880	1460×1785×1080	1460×1785×1080
Internal dimensions (W×H×Dmm)			600×600×600	800×800×600	800×1000×800	1000×1000×800
Capacity (Liter)			216	384	640	800
Weight (kg)			170	230	310	330
Accessories	Operation manual		1 Copy			
	Shelf	Quantity	2 shelves, 4 shelf supports			
		Minimum installation pitch (mm)	50			
		MAX. number of shelves	11	15	19	19
	Connecter		1 unit (Power supply for the specimen to be tested)			
	Warranty		Mailed separately			

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

HG TYPE

Forced hot air exhaust High temperature chamber for solvent drying.

The HISPEC HG series is a temperature chamber that aims for "Safety being paramount." Heat treatment and drying that involves the generation of combustible vapors, such as in the ceramics molding process and in drying after substitute freon washing, can be carried out. Please make use of it as a heat treatment and drying process.

The fan system in the chamber is a forced air exhaust system

The combustible gas that is generated in the chamber does not circulate but is completely discharged and the rise in gas density is restricted.

Gas density alarm is standard equipment

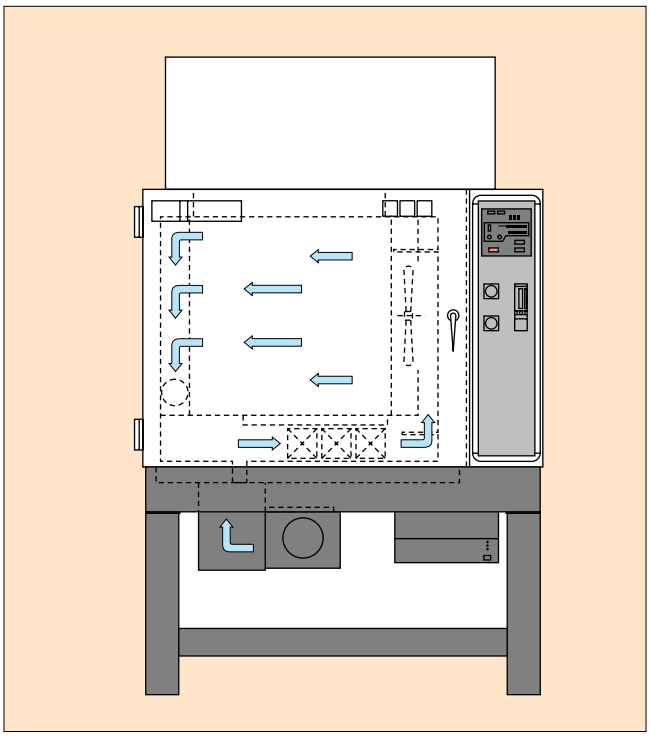
A gas density alarm as a high temperature countermeasure has been made standard equipment. The interior of the test chamber is always monitored and it only operates under conditions at or below the lower limit for an explosion.

Protection design easy to operate

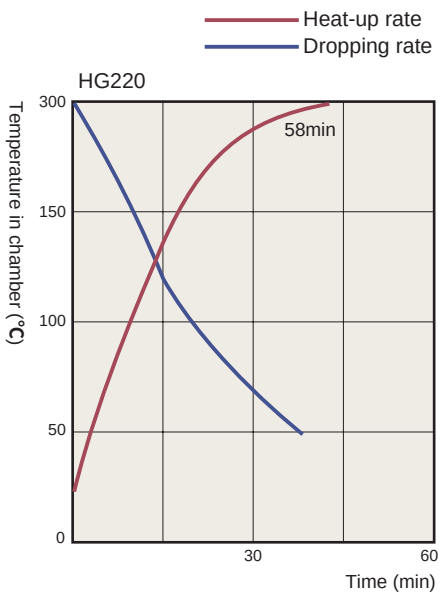
The door, out of consideration for ease of use and the protection of users, is equipped with a safe and simple lock mechanism and power failure recovery prevention. Air exhaust continues for a fixed time after a power failure.

Equipped with protection mechanisms throughout

Security capabilities represented by the explosion vent mechanism are provided as standard equipment throughout, such as in the special design of the structure of the chamber interior.



Temperature heat-up&dropping rate



Specifications for Forced Hot Air Exhaust High Temperature Chamber for Solvent Drying

Product name			Forced hot air exhaust high temperature chamber for solvent drying
Type			HG220
Performance	Temperature range		(Ambient temperature＋20℃)～＋200℃
	Temperature uniformity		±3.0℃ (at ＋200℃)
	Temperature heat-up rate		Within 50 minutes (Room temperature→＋200℃)
Controller	Control method		Microcomputer controlled temperature controller (ETACOM) / PID control method
	Setting / display resolution		1.0℃
	Setting / display accuracy		0.5% (F.S) ＋1℃/digit
	Sensor		K thermocouple
Body	External material		Cold rolled steel plate with baked coating finish
	Internal material		SUS304 (Lower half of the chamber interior is finished with welded surface)
	Thermal insulation materials		Glass wool
Humidifying heater			Sheathed heater
Air transport mechanism	Electric motor		Single phase motor
	Fan		Propeller fan
	Air exhaust outlet		φ98
	Amount of exhaust air		Approximately 1m³ / min
	Electric motor		Single phase motor
	Fan		Sirocco fan
Protection functions	Explosion vent		Explosion pressure relief vent
	Overheat protector		Overheat protector for chamber air
	Overheat protector for heater		Overheat protector for ambient heater
	Gas alarm		Operation stops when the gas concentration reaches 30% of the minimum allowable concentration.
	Back-up power supply		Air supply fan and gas alarm can be backed up for longer than 5 minutes.
	Other		Leakage breaker for power supply, Fan motor thermal protector, Supply air fan motor thermal protector switch, Temperature fuse, Heating delay mechanism, Fan stoppage delay mechanism, External alarm terminal, Abnormality display, Overheat protector (With ETACOM), Set temperature limiting function, Keeping function prevention with instant power failure, Alarm for temperature exceeding the set point ＋10℃, Overheat protector (For upper set temperature limit), Door limit switch, Microcomputer self-diagnostic function (Abnormal CPU, Damaged sensor, Damaged heater, Abnormal ambient temperature), Warning buzzer
Additional functions			Memory back-up (Approx. 5 years), Final step operation holding function, Auto start, Auto stop program, Operation function (2 steps×3 patterns)
Power supply			AC200V three phase 50 / 60 Hz
Full load current (A)			19
External dimensions (W×H×Dmm)			1215×1920×1015
Internal dimensions (W×H×Dmm)			600×600×600
Capacity (Liter)			216
Weight (kg)			200
Accessories	Operation manual		1 Copy
	Shelf	Quantity	2 shelves, 4 shelf supports
		Minimum installation pitch (mm)	50
		MAX. number of shelves	11
	Connecter		1 unit (For external alarm terminal)
	Warranty		Mailed separately

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

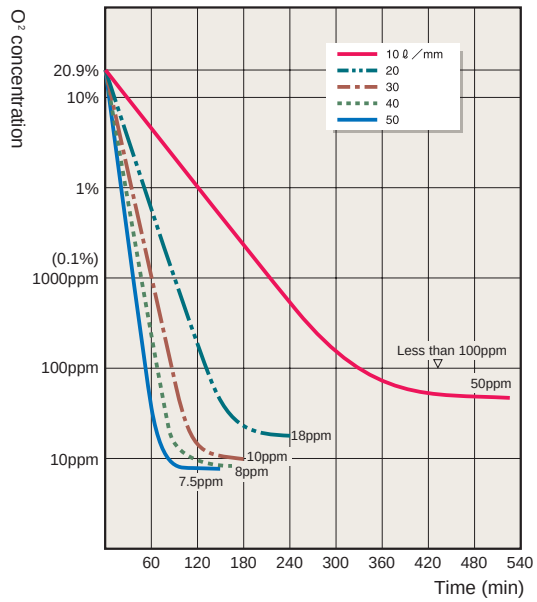
N TYPE

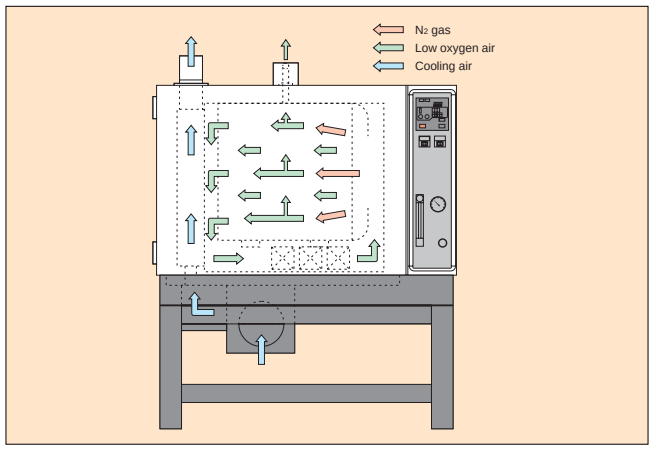
Anaerobic oven.

When thermal processing parts that contain copper and silver electrodes, you must always be careful to monitor the effect of temperature and membrane oxidation upon each other. The new high performance OVEN HT320N from ETAC finally presents a solution. You can even enjoy a reduction in operating costs.This new model has also realized a quicker temperature reduction rate under hermetically sealed, anaerobic conditions.In addition to these innovations, this new model excels in chamber operation safety standards and improves operating efficiency.

Residual oxygen concentration in the chamber of 100ppm or less

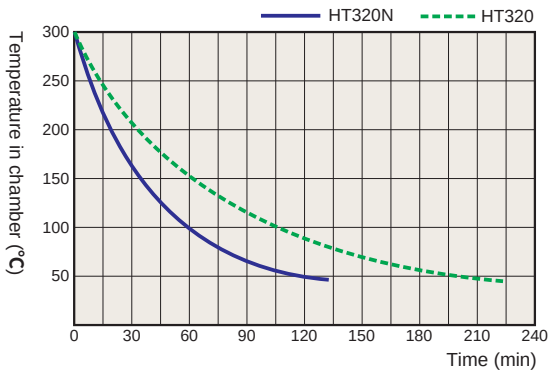
The sealed construction of the door and the oven interior, reproduces a residual oxygen concentration of 100ppm or less.



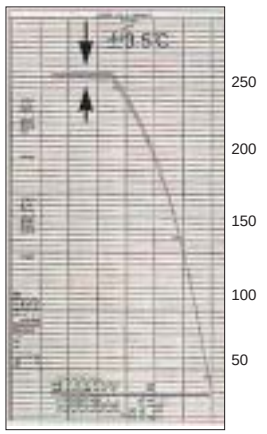


Our advanced quick temperature reduction system delivers increased productivity

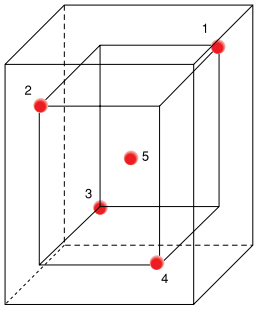
For example, even under testing conditions with the chamber door closed, the temperature cooling rate from 250℃ down to the required testing level is 1.5 times faster than in any other model of its type (internal comparison). A water-cooling system speeds up the temperature reduction time even more.



Improvements of yield rate of thermal process due to even temperature distribution



We guarantee temperature uniformity of only ±3.5℃ (when set at +250℃)



Specifications for Anaerobic Oven

Product name		**Anaerobic oven**
Model		HT320N
Circulation method		Forced convection system
Performance	Temperature range	(Ambient temperature ＋40℃) ～ ＋250℃
	Temperature unifomity	±3.5℃ at ＋250℃
	Temperature heat-up rate	Within 60 minutes (Room temperature→ ＋250℃)
	Control method	Microcomputer controlled temperature controller (ETACOM) / PID control method
	Remaining concentration of oxygen	Less than 100ppm
Controller	Setting / display accuracy	0.5% (F.S) ±1℃/digit
	Setting / display resolution	1℃
	Sensor	Thermocouple JIS K
Body	External material	Cold rolled and rust-proof steel plate with baked finish
	Internal material	SUS304 stainless steel plate with all welding structure
	Thermal insulation matelials	Glass wool
Thermal heater		Sheathed heater
Ventilator		Single phase electronic device AC200V
Fan		Propeller fan
N_2 opening		3 / 8 B socket
N_2 exhaust		3 / 4 B hose nipple
N_2 pressure meter		6kg f / cm^2 Attached pressure adjustable valve
N_2 flow meter		0～50 liter / min
Cooling system		Forced air-cooling system (Upon completing operation)
Protection devices		Leakage breaker for power supply, Overheat protector (Built-in controller), Overheat protector in separate circuit, Fan motor thermal protector, Recovery prevention from power failure, Keeping function prevention with instant power failure, Warning alarm, Lower temperature limit alarm, Warning message display, Overheat (Setting temperature ＋10℃) alarm, Door opening function, Diagnosis function (CPU warning, Sensor snapping, Heater snapping, Unusual surrounding temperature), Control circuit and heater circuit protector
Addtional functions		Memory back-up function (Approx. 5 years), Auto-start feature, Auto-stop feature, Program operation function (20 steps × 3 patterns), Keep final step operation function
Option		N_2 flow meter with alarm, Primary regulator, Concentration tester of oxygen (% level), Concentration tester of oxygen (ppm level), Detection of unusual pressure, Cooling fan with time signal, Warning buzzer for test completion, Warning buzzer, Flashing warning light, Flashing warning light with buzzer, Calendar timer, Hour meter, Shelving, Load durable shelf, Angled scaffolding with caster, Power failure automatic recovery function, Output for completing test, Designating color for main machine, RS485 interface, Programming function, Remote function, Time indicator, Wait function, Temperature indicator, Power source cable, 3.5mm^2 4 core cable (3m, 5m, 10m)
Accessories		Operation manual, Alarm terminal, 2 shelves, 4 shelf supports
External dimensions (mm)		W1350×H1645×D905
Internal dimensions (mm)		W600×H 600×D600
Power supply		AC200V 3 phase 50 / 60Hz fluctuation for voltage less than ±10%
Full load current (A)		13
Capacity (Liter)		216
Weight (kg)		160

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

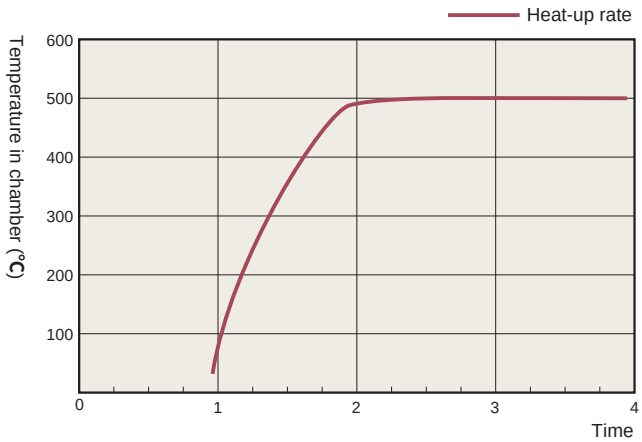
H TYPE

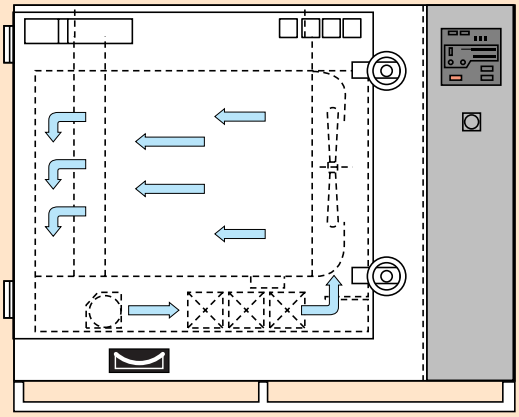
High temperature chamber

This model is suitable for a wide range of usages such as heat testing and high temperature life testing of inorganic materials including ceramics and various metals or engineering plastics. It is safe to use and assures you highly accurate testing.

High performance, High accuracy!

This device can reach a maximum temperature of 500℃ in 75 to 90 minutes. Moreover, ETAC's unique PID control system prevents temperature overshooting. In addition, temperature distribution in the test area is highly uniform.





Safety-oriented design

- Our triple safety mechanism, namely the overheat protector, upper temperature limit setting, and thermal fuse prevent abnormal temperature increases.
- In order to cater to long hour usage at high temperatures, a door lock mechanism is now included. In addition, door packing material has been doubled to create a reliable sealed structure.

User-friendly controller

It is easy to operate because the same controller for HISPEC HT and the HS series is used. Moreover, the temperature controller comes with a 2 step program operation as its standard function, as well as automatic start/stop functions, and an activation indication function of each safety device.

Specifications for
Type H
High Temperature Chamber

Product name			High temperature chamber	
Type			EHT-1H	EHT-2H
Circuit system			Enforced hot air circulation / ventilation system	
Performance	Temperature range		Up to 500℃ (At ambient temperature of ＋40℃)	
	Temperature uniformity		±5.0℃ (At 500℃)	
	Temperature heat-up rate		Within 75 minutes (From room temperature to reach 500℃)	Within 90 minutes (From room temperature to reach 500℃)
Controller	Control method		Microcomputer controlled temperature controller (ETACOM) / PID control method	
	Setting / display resolution		1.0℃	
	Setting / display accuracy		0.5% (F.S) ＋1.0℃/digit	
	Sensor		JIS K	
Body	External material		Cold rolled steel sheet, Baked finish	
	Internal material		Stainless steel plate (SUS304)	
	Thermal insulation matelials		Heat-resistant glass wool	
Thermal heater			Nichrome strip heater	
Air transport mechanism	Electric motor		AC200V, 3 phase, 400W	
	Fan		Propeller fan	
	Damper		Circulation / ventilation switch mechanism	
	Exhaust vent		ϕ82 (With exhaust duct)	
Safety device			Earth leakage breaker, Overheat protector (Built in the controller), Fan motor thermal protector, Automatic restart prevention function after power failure, Interlock terminal, Abnormality indicator, Overheat alarm to notify temperature increase of ＋10℃ above the set temperature, Self-diagnostic functions (CPU error, Sensor Disconnection, Heater disconnection, Abnormal ambient temperature), Thermal fuse, Digital overheat protector	
Additional functions			Memory backup (Approx. 5 years), Automatic start / stop functions, Program operation function (2 steps×3 patterns), Continuous operation function following the final step	
Power supply			AC200V 3 phase, 50 / 60Hz	
Full load current (A)			13	18
External dimensions (W×H×Dmm)			1290×1160×1010	1440×1175×1160
Internal dimensions (W×H×Dmm)			450×450×450	600×600×600
Capacity (Liters)			91	216
Weight (kg)			185	280
Accessories	Operation manual		1 copy	
	Shelf	Quantity	2 shelves, 4 shelf supports	
		Minimum installation pitch (mm)	50	
		MAX. number of shelves	8	11
	Connecter		1 unit (For specimen power supply)	
	Warranty		1 copy	

*The displayed performance is at ambient temperature of ＋20℃ and when there are no test specimens in the chamber.
*These specifications may be changed without notice for improvement or modification.

Many options have been provided so that the standard products can be used to the utmost.

Options to strengthen protection functions

External alarm terminal

Contact rating AC240V 3A

Warning buzzer

By combining the time-up output and the alarm output it warns of the completion of heat treatment and the occurrence of trouble.

Flashing warning light

In combination with the alarm output, it rotates, flashes and warns of the occurrence of trouble. (with buzzer)

Overheat protector (temperature controller)

In addition to the overheat protector that is provided as standard equipment it is used when fourfold safety is necessary and when temperature control management of the heater chamber is necessary.

Sheathed heater

Horizontal type exclusive option (material quality SUS304), used for corrosion resistance and preventing heater red heat.

Exhaust air duct

Necessary when it is not possible to discharge air towards the back surface of the equipment and when discharging outside the room.

Metal fittings for stacking

Necessary when stacking the horizontal types.

Options to enhance the use objective

Calendar timer

Setting time range / AM 0 : 0〜11: 59
PM 0 : 0〜11: 59
*Setting in 1 week units is possible

Wind velocity control function

The revolving speed of the fan is controllable. Used when a test at a low wind velocity is necessary such as the drying of film-like items.

Automatic damper

By combining time-up output, alarm output or time signal output it selects the damper start timing.

Paperless recorder

Possible to memorize external media (CF card), then download to PC by application-program.
*Possible to install existing dot type recorder

Electric input terminal

Used in the voltage impressing of high temperature operation tests of electrical and electronic parts or high temperature load life tests.

Hour meter

For adding up the hours of use.

Cable port

For horizontal type use

For vertical type use

Port for cables, etc., with gauges of ø25, ø54, ø100.

Viewing window

Heat resistant strengthened glass with oven interior lamp
(only handles the +200℃ specification)

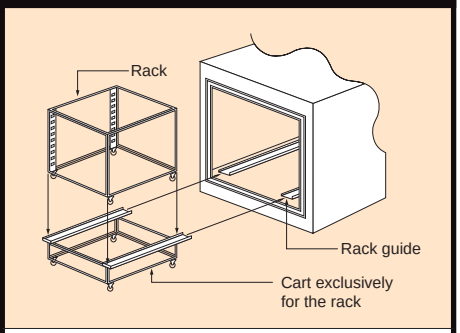
Shelf (with support)

Standard specification:
- Permissible load 15kg (uniformly distributed load)
- Shelf mounting pitch 50mm

Forced shelf board (with support)

- Permissible load 50kg (uniformly distributed load)
- Shelf mounting pitch 50mm

Rack & rack cart



Exclusive conveyance jig when HISPEC is used as an apparatus for production.

Rack

The rack is necessary when adjusting the specimens to a height at which it is easy to work.
There are three types: assembling rack, angled rack, angled rack (with casters).

Hinged double door (for horizontal type)

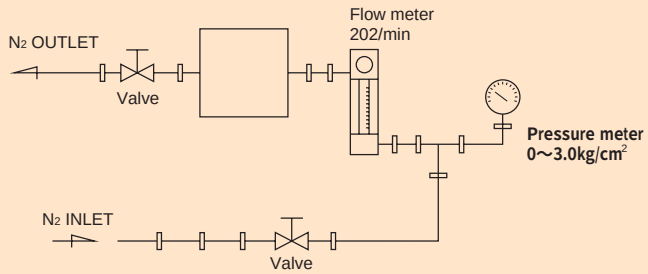
Halves the opening arc of the large high temperature chamber doors for conserving space. Also convenient for taking specimens in and out.

Recorder output terminal

Terminal for connecting to an external recorder (K thermocouple)

Simple N_2 replacement set

System diagram



Is used for specimens that are apt to be easily damaged by oxidation.

Reinforcement of interior bottom

Reinforces the chamber floor surface and is used in the heat treatment of heavy specimens. *Unable to handle the horizontal types #10 and #20 as well as #10S and #20S

Gear aging mechanism

It is designed to your requirements.

Power failure restarting feature

In contrast to the standard power failure recovery specification that does not restart until the operation key is pressed, this function automatically restarts when the power failure is 5 minutes or less.

Main body coating color

It is coated in the designated color.

Options for diversification

Time up output terminal

Contact rating AC240V 3A

RS485 interface

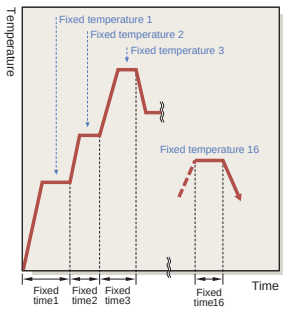
- Baud rate: 9600bps
- Communication method: half duplex
- Parity check : no
- Data length : 8 bit
- Start-stop bit : 1 bit
- X parameter : no
- RTS control : no
- Max. receivable character: 28 (28 byte)

*Available RS232/485 converter as another option for PC connection

Caster & adjuster

Integrated rubber wheel and adjuster foot specification.

Program specification



Program operation of up to 20 steps is possible.

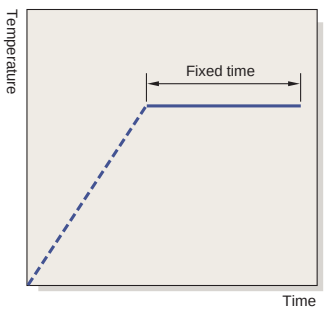
Remote function

By using an external signal, this function remotely operates the start / stop operations that are normally carried out through the operation panel.
(Attach to the remote terminals on the back surface of the chamber)

Time signal

Includes two time signal contacts that start at any step during pattern operation(contact rating AC250V 5A). The respective starting steps are selected when the pattern operation is set.

Wait function



This is a controlling function effective only at the time of fixed value operation. In contrast to the fixed time of the standard specification that is counted by including the rising / falling times, the wait function excludes the rising / falling times from the fixed time and counts at the wait time of the fixed temperature.

ETAC helps our customers produce "High quality products" *

ETAC®

*By making the best use of our own expertise and by providing quality service, we aim to help our customers to develop high-quality, reliable products.

http://www.etac.kusumoto.co.jp/

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Customer Support Center TEL 81-3-3295-7493

For further inquiries, contact:

ISO9001 Certified
JQA-QM8943

Notice for safe use

When using, please read attached manual carefully. Avoid installing in places where water, moisture, dust, or soot may gather. These may cause fire, accident, or electric shock.

0612-RC-3000(2-P)