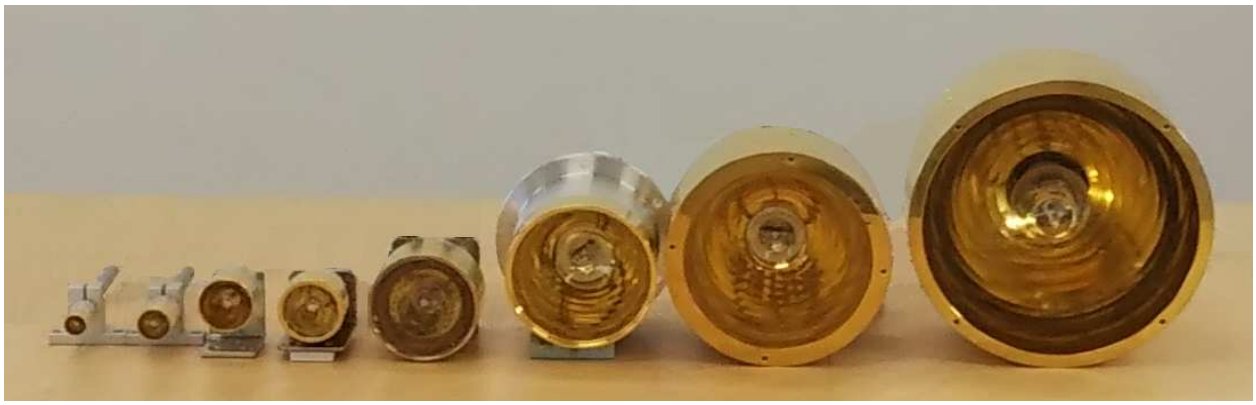
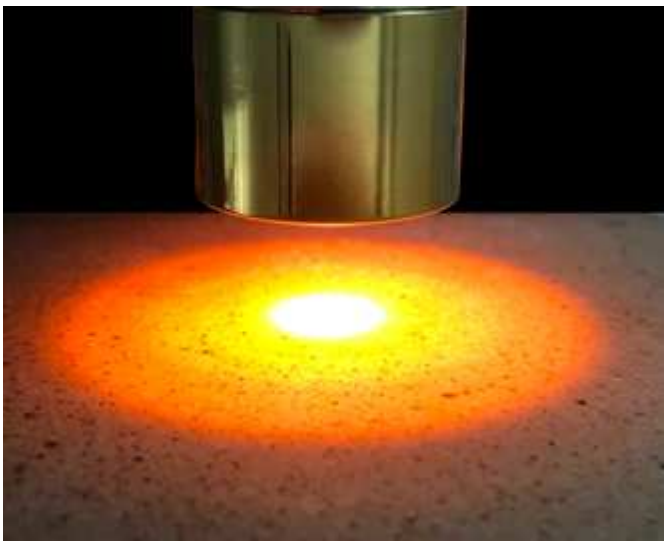
High Speed Heating

Halogen Point Heater

HPH series





Heat-tech

Heat-tech

Ⅰ Application examples and products introduction

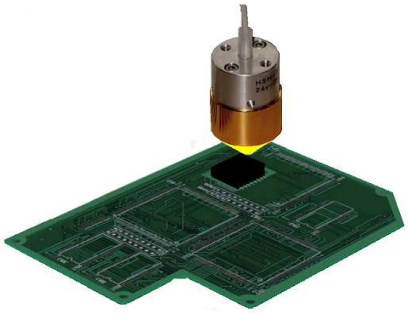
Ⅱ Dimensions

Ⅲ R & D lab kit

Ⅳ Heater Controller

Applications of Halogen Point Heater

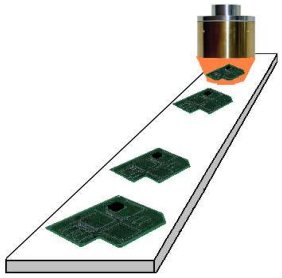
■No.1 Soldering of printed circuit boards



《 Problem Point 》
We have no idea about how to lead-free soldering of printed circuit boards.

《 ⇒Kaizen Point 》
The spot was heated by the small type of the Halogen Point Heater.
Elevating the temperature time is short,
it worked so easy soldering temperature control.
Since the heating spot, with minimal thermal stress to other parts.
Moreover, since non-contact, no physical damage even solder dregs.

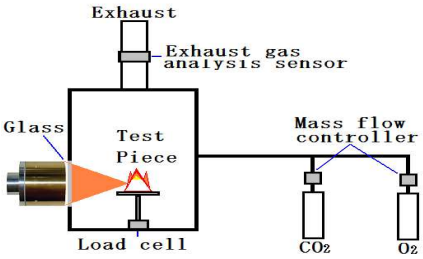
■No.2 Preheat of printed circuit boards



《 Problem Point 》
We have no idea about how to preheat of printed circuit boards.

《 ⇒Kaizen Point 》
Preheated and out of focus the Halogen Point Heater.
Elevating the temperature time is short,
it worked so easy soldering temperature control.
Since non-contact heating, the ease of handling.

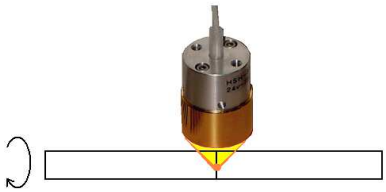
■No.3 Burning in low oxygen density environment



《 Problem Point 》
We have no idea about how to burning in low oxygen density environment.

《 ⇒Kaizen Point 》
The radiant heat was given with the Halogen Point Heater.
The gas analysis in the burning gas became possible
while controlling the oxygen density.
Up to now, it has become possible to acquire the burning data of the flame resisting material that was not able to be examined.

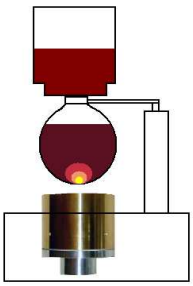
■No.4 Joint of thermoplastic resin tubes



《 Problem Point 》
We have no idea about how to joint of thermoplastic resin tubes.

《 ⇒Kaizen Point 》
The thermoplastic resin tube was joined with the Halogen Point Heater.
The heating melt was done, and the central portion of the tube wall thickness at the tube end was pressurized comparing the edges, and connected to the subject by the anastomoses.
The work efficiency has improved by heating it in the heater efficiently, and promptly.

■No.5 Optical siphon table

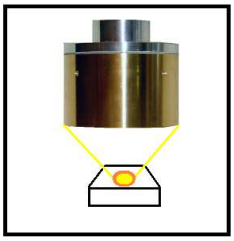


《 Problem Point 》
We were embarrassed because there was being able no gas piping.

《 ⇒Kaizen Point 》
The siphon was heated with the Halogen Point Heater.
The design of the layout of the store became free
because it was able to extract coffee without the gas piping.
In addition, it became easy to maintain the glass siphon
because the glass was penetrated and it warmed water directly.
Coffee became delicious because of fantastic light.

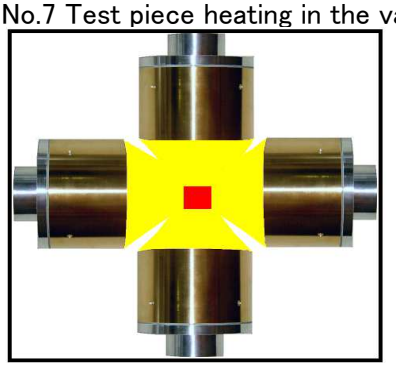
Applications of Halogen Point Heater

■No.6 Heat source of heat power generation examination system



《 Problem Point 》
We have no idea about how to heat source of heat power generation examination system.
《 ⇒Kaizen Point 》
The heat power generation module generates electricity by heating the surface and cooling the back.
The Halogen Point Heater was able to turn up the heat up to 1000℃ or less momentarily.
The controller controlled the temperature, measured the output current and the voltage, and obtained the I-V characteristic etc.

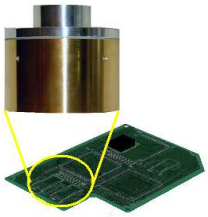
■No.7 Test piece heating in the vacuum chamber



《 Problem Point 》
We have no idea about how to test piece heating in the vacuum chamber.

《 ⇒Kaizen Point 》
The Halogen Point Heater has turned up the heat to 1400℃ momentarily.
The change in the material occurred clearly.

■No.8 Dryness of print



《 Problem Point 》
We have no idea about good way to spot in the dry heat.

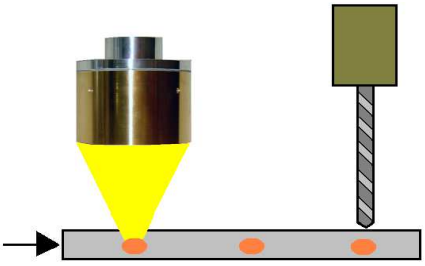
《 ⇒Kaizen Point 》
Raised the temperature in 15 seconds with the Halogen Point Heater.
So clear that the target could prevent heat damage.

■No.9 Sintering examination of ceramics

《 Problem Point 》
We have no idea about good way to easily control and hot quickly.

《 ⇒Kaizen Point 》
The ceramics was high temperature heated with the Halogen Point Heater small spot.
The sintering examination went well because the temperature rise and the cooling time were short, and the temperature limiting was easy.
The controller controlled the temperature, measured the heating inclination, and obtained the reproducibility characteristic.

■No.10 Removal of the surface tension of the pipe hole drilling

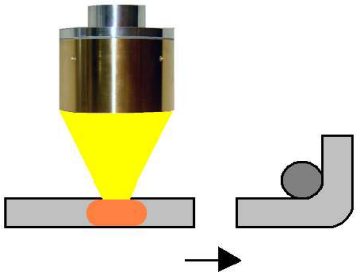


《 Problem Point 》
The hole crack happened and very troubled.

《 ⇒Kaizen Point 》
The pipe preheated with the Halogen point Heater.
The surface tensity was removed because it heated at the suitable temperature and the crack disappeared.

Applications of Halogen Point Heater

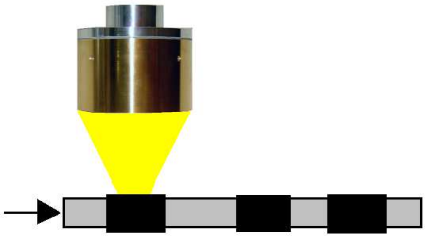
■No.11 Preheating of bending work



《 Problem Point 》
The hole crack happened and very troubled.

《 ⇒Kaizen Point 》
The pipe preheated with the Halogen point Heater.
The surface tensity was removed because
it heated at the suitable temperature and the crack disappeared.

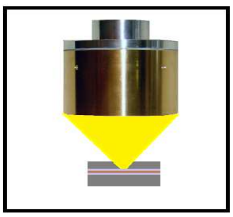
■No.12 Heating of heat-shrinkable tubing



《 Problem Point 》
The hole crack happened and very troubled.

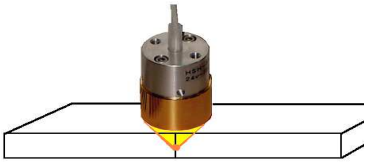
《 ⇒Kaizen Point 》
The pipe preheated with the Halogen Point Heater.
The surface tensity was removed
because it heated at the suitable temperature and the crack disappeared.

■No.13 Forming of the multilayer polymer film



《 Problem Point 》
There was no heater can heat to penetrate the polymer film
on the upper side metallic mold..
《 ⇒Kaizen Point 》
We use the Halogen point Heater
Because the halogen point was heated to pinpoint
the location of the targeted by passing on.
It heated more quickly , and up the production cycle time.

■No.14 Plastic resin welding

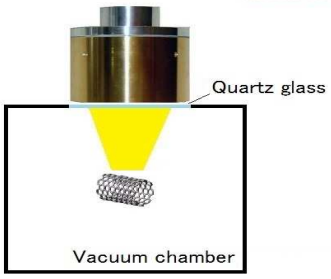


《 Problem Point 》
It was no easy way to trouble-free welding without oxygen.

《 ⇒Kaizen Point 》
Welded by the small point halogen heater.
Easily welded in nitrogen atmosphere.
Junction with improved quality.

■ No.15 Firing of carbon nanotubes

Heat-tech

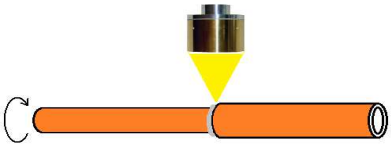


《 Problem Point 》
We have no idea about good way to firing in the no-oxygen.

《 ⇒Kaizen Point 》
It was fired at small halogen point heater.
It can be fired with a simple compact device, experiment proceeded.

Applications of Halogen Point Heater

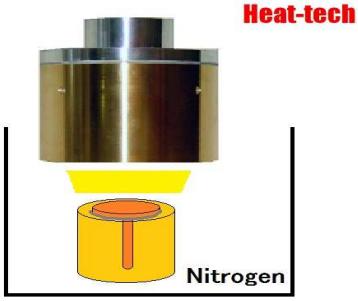
■ No.16 Brazing of fuel cell vehicles pipe



《 Problem Point 》
We have no idea about good way to brazing in the no-oxygen.

《 ⇒Kaizen Point 》
It was brazed with small halogen point heater.
Junction quality is improved.

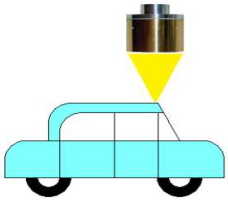
■No.17 Brazing of Mini Valve



《 Problem Point 》
We have no idea about good way to brazing in the no-oxygen.

《 ⇒Kaizen Point 》
It was brazed with small halogen point heater.
Junction quality is improved.

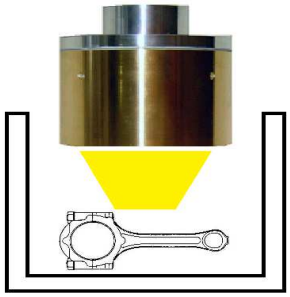
■No.18 Point heating and drying of the sealant



《 Problem Point 》
In the winter, it is in trouble sealant without drying out.

《 ⇒Kaizen Point 》
Dry by heating with a halogen heater point.
Easy dried.

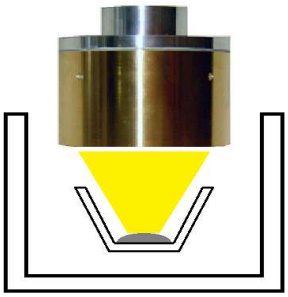
■No.19 Performance testing of heat-resisting metal



《 Problem Point 》
It is in trouble if there is no heater in a high temperature
in a short period of time.

《 ⇒Kaizen Point 》
Heat-resisting metal is heated at high output halogen point heater of 3kw.
Heated at red-shine high temperature in a short time.

■No.20 Synthesis of ceramics

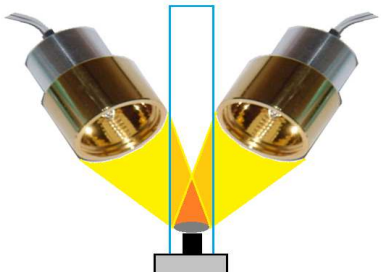


《 Problem Point 》
It was in trouble without a heater that can be synthesized ceramics
in a short period of time.

《 ⇒Kaizen Point 》
Ceramics is heated at high output halogen point heater of 3kw.
Ceramics was heated to a temperature which melts in a short time.

Applications of Halogen Point Heater

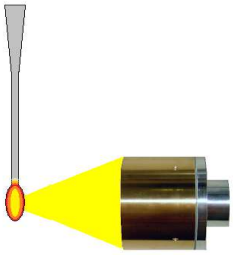
■No.21 Heat source of CVD Reactor Using Concentrated Infrared



《 Problem Point 》
The heating furnace with controllability, that is highly compact and high energy efficiency was required.

《 ⇒Kaizen Point 》
The use of halogen point heater that can be high-temperature heating in a short time.
Heating process energy efficient can be realized in a small.

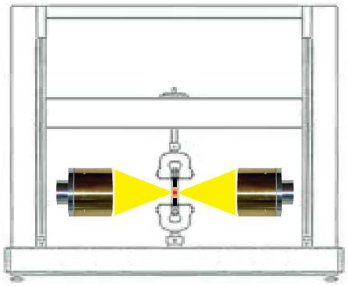
■No.22 High-temperature sterilization of Supatera



《 Problem Point 》
The small high temperature sterilization equipment not using an open flame was required.

《 ⇒Kaizen Point 》
It is using a halogen heater point that can be sterilized in 5 seconds after lighting.
Sterilization process without the influence of the residual material can be realized.

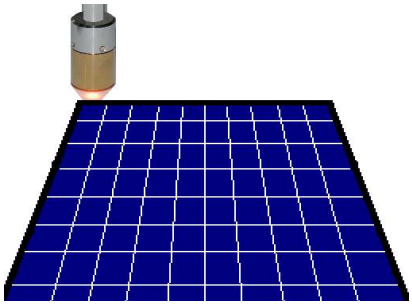
■No.23 Temperature setting of the tensile testing machine (non-magnetic material & high temperature)



《 Problem Point 》
The equipment which can heat a nonmagnetic material to high temperature was required.

《 ⇒Kaizen Point 》
The use of halogen point heater that can be high-temperature heating in a short time.
Heating process energy efficient can be realized in a small.

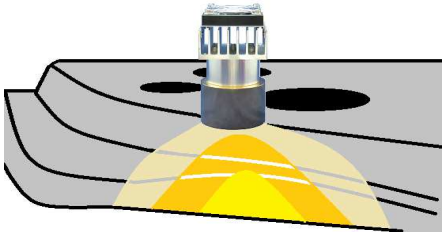
■No.24 Detailed examination of the solar panel (photovoltaic module)



《 Problem Point 》
Performance of high quality has been desired to increase the power generation efficiency.

《 ⇒Kaizen Point 》
It is able to test a pinpoint defects in solar panels.
It is examined by high-speed non-contact due to the use of halogen light.
Moreover, it is possible to use a simple mechanism due to the use of DC12V power.

■No.25 Drying after Precure sealer application

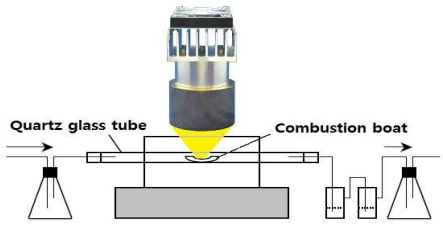


《 Problem Point 》
Equipment was big by high-frequency heat and layout change was difficult.

《 ⇒Kaizen Point 》
Could be simplified mechanism since using the Halogen Point Heater.
Teaching for using a halogen light was also easy.
Moreover the air-cooled type was used, so the water- cooling unit also became unnecessary.

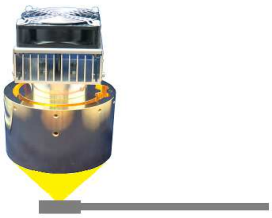
Applications of Halogen Point Heater

■No.26 Metal analysis of incineration waste



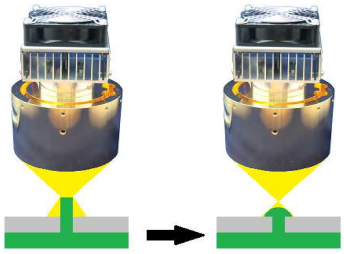
《 Problem Point 》
There was no one that can be easily high-temperature heating
in a tabletop until now.
《 ⇒Kaizen Point 》
Could be inexpensively experimentally because using the Halogen Point Heater.
Power is so 450W, It is able to easily powered from the laboratory outlet.
And the water cooling unit is also no longer needed
because using the air-cooled type.
In addition, we ware able to confirm visually fuming.

■No.27 High temperature light sterilization of a spatula (scoopula)



《 Problem Point 》
There was no one that can be easily high-temperature sterilization
in a tabletop until now.
《 ⇒Kaizen Point 》
Because we use a halogen-point heater was easy
to high-temperature sterilization.
It was able to easily powered from the laboratory outlet.
Also enabled to resistant bacteria and unknown bacteria, it has improved safety.
In addition, it was able to confirm visually burning turn red.

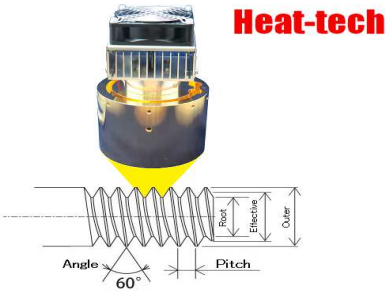
■No.28 Infrared heat caulking of resin boss



《 Problem Point 》
Resin adheres to the punch, and this has been a cause of the processing failure.

《 ⇒Kaizen Point 》
We use the halogen point heater heating the resin boss.
Problem is solved because construction methods that do not use the punch.
Because it forms a dome without cutting the fibers,
the mechanical strength is improved.
In addition, since the work piece it is also heated gently to improve the affinity
with the resin.

■No.29 The distortion test by partial heating of precision parts

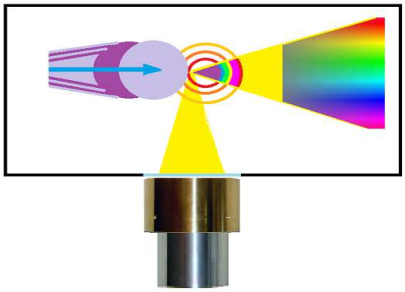


《 Problem Point 》
It could not distorted test due to sliding heating of precision parts.

《 ⇒Kaizen Point 》
The precision parts by using a halogen point heater was high temperature heatin
Since can be heated to a high temperature in the pin point, the dynamic
characteristics of the high-temperature environment could be measured.

Because compact, installation of equipment could be free.
In addition, since the non-contact heating, error and I was eliminated by contac

■No.30 Heating of the sample in a Linear Accelerator · X-ray laser

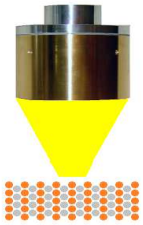


《 Problem Point 》
It was not able to heat the material from the outside of the vacuum chamber.

《 ⇒Kaizen Point 》
We saw it using a halogen point heater and heated it at high temperature
from a window.
A sample was activated, and observation reached well.
Since the compact, installation of the equipment could be free.

Applications of Halogen Point Heater

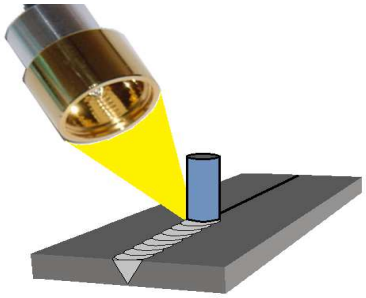
■No.31 Synthesis of fine metal powder bonding material



《 Problem Point 》
The heat resistance of the bonding material had a limit.

《 ⇒Kaizen Point 》
Changes in the material could be confirmed by visual inspection.
Since infrared heating and heated in a nitrogen atmosphere,
was able to prevent oxidation.
Since the compact, installation of the equipment could be free.

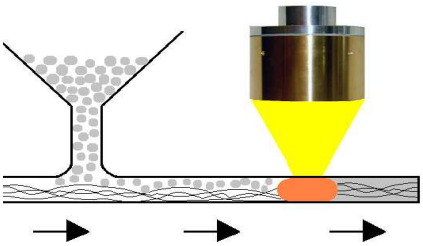
■No.32 Auxiliary heat source of friction stir welding



《 Problem Point 》
There was not a heating method to make a steel sheet a high temperature in pinpoint.

《 ⇒Kaizen Point 》
We have auxiliary heating using a halogen point heater.
Because it is heated to a high temperature pinpoint, welding time is shortened.
Since the compact, installation of the equipment could be free.

■No.33 Synthesis of CFRP in a nozzle



《 Problem Point 》
There was not the small heater which could heat a nozzle.

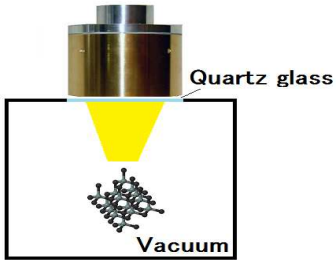
《 ⇒Kaizen Point 》
The nozzle was heated to high temperatures and the use of ultra-small halogen point heater HPH-18.
Since the compact, installation of the equipment could be free.

■No.34 Borosilicate glass tube melting

《 Problem Point 》
There was no substitute heat source to replace gas.

《 ⇒Kaizen Point 》
Borosilicate glass tube was melted using a halogen point heater.
The glass tube processing process was composed only by electric equipment.
In addition, we fulfilled the administrative guidance of the Fire-department.

■No.35 Calcination of SiC silicon carbide

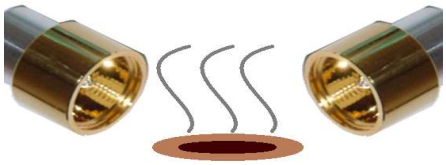


《 Problem Point 》
There were no sources of heat which can easily heat SiC silicon carbide.

《 ⇒Kaizen Point 》
SiC silicon carbide was heated using the Halogen Point Heater.
As it became the high temperature in a short time,
the experimental speed went up.

Applications of Halogen Point Heater

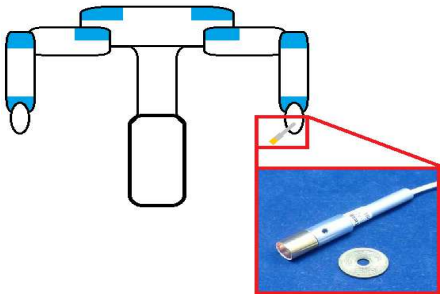
■No.36 Caramel-ization of sugar



《 Problem Point 》
There was no substitute heat source to replace gas.

《 ⇒Kaizen Point 》
We made a caramel by sugar using a halogen point heater.
The glass tube processing process was composed only by electric equipment.
In addition, we fulfilled the administrative guidance of the Fire-department.

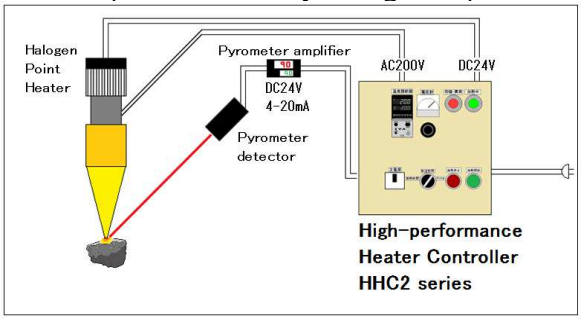
■No.37 Heating processing of the double-arm robot.



《 Problem Point 》
There was no compact heater that can be mounted on a dual arm robot.

《 ⇒Kaizen Point 》
It was heated using microminiature Halogen Point Heater HPH-12.
Handling became easy since it is a finger size of 95 mm in total length.

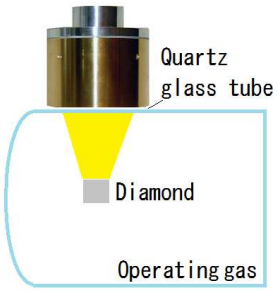
■No.38 Experimental study on high temperature dynamic characteristics of rocks



《 Problem Point 》
The creep characteristics of sedimentary soft rocks at high temperatures could not be grasped.

《 ⇒Kaizen Point 》
And heated at high temperature using a halogen point heater
Since it can be heated to any temperature by the feedback control,
The temperature dependence of the creep characteristics and the stability of the dynamics can be grasped.

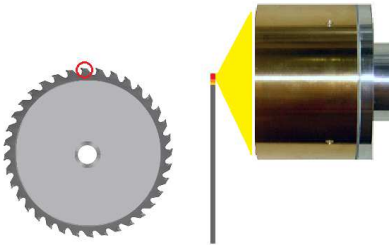
■No.39 Trial manufacture of diamond quantum sensor



《 Problem Point 》
There was no way to easily bring the diamond in the glass tube to 1000℃

《 ⇒Kaizen Point 》
It was heated to a high temperature using a halogen point heater.
The equipment became smaller and it became easier to apply for research funds.
Moreover, the efficiency of screening increased because the heating could be instantaneously to 1000℃

■No.40 Soldering of tip saw

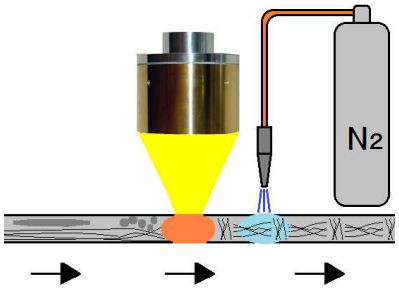


《 Problem Point 》
There was no easy way to set the tip of the tip saw to 1000 ° C.

《 ⇒Kaizen Point 》
It was heated to a high temperature using a halogen point heater.
Since it can be processed only with the electrical equipment, the layout of the factory can be changed flexibly.

Applications of Halogen Point Heater

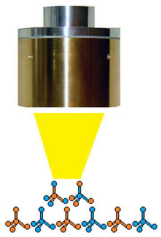
■No.41 Development of crystal structure of magnetic substance



《 Problem Point 》
There was no way to heat at any temperature and cool at any temperature to develop the crystal structure

《 ⇒Kaizen Point 》
It was heated to a high temperature using a halogen point heater.
Since it was light heating, temperature profiling could be set without interfering with the cooling nitrogen gas.
Moreover, the equipment became smaller and it became easier to apply for research funds.

■No.42 Synthesis of alloy particle



《 Problem Point 》
There was no way to easily heat the metal particles to a high temperature.

《 ⇒Kaizen Point 》
It was heated to a high temperature using a halogen point heater.
Stabilized heating at an arbitrary temperature by feedback control with near infrared ray that is easily absorbed by metal.
The equipment became smaller and it became easier to apply for research funds.
In addition, since high temperature heating can be performed instantaneously, screening efficiency has been improved.

■No.43 Thermal expansion evaluation of semiconductors

《 Problem Point 》
There was no easy precision heating method for semiconductors.
《 ⇒Kaizen Point 》
It was heated to a high temperature using a halogen point heater.
Stabilized heating at an arbitrary temperature by feedback control with infrared ray that is easily absorbed by resin.
The equipment became smaller and it became easier to apply for research funds.
In addition, since high temperature heating can be performed instantaneously, screening efficiency has been improved.

■No.44 Thermal expansion evaluation of a special alloys

《 Problem Point 》
There was no easy precision heating method for semiconductors.
《 ⇒Kaizen Point 》
It was heated to a high temperature using a halogen point heater.
Stabilized heating at an arbitrary temperature by feedback control wit
The equipment became smaller and it became easier to apply for research funds.
In addition, since high temperature heating can be performed instantaneously, screening efficiency has been improved.

【 Handling notes 】

1) Strong light is harmful to the eyes.
There is a risk of blindness when looking straight at the halogen light.
Please protect eyes with thick sunglasses etc.
when you see the condensing part of the filament and the spot heater of the lamp under lighting.

2) When the electric current flow or heating, please avoid touching the hand to the heater.
For high temperatures, user may get burned.

3) The maximum working temperature of HPH series is 160 ℃.
If user live more than 30 seconds may not exceed the specified temperature, please do the cooling.

4) HPH series are not explosion proof.
If experiencing explosive flammable gas when heated and dried, please do ventilation to safely.

5)Please do not touch the heating object to the HPH series while the electric current flow
There is a possibility of the leak and the ignition according to the short.

6)Please use the heat resistance wires such as the glass coating silicon rubber insulation electric wire , Siegel line or the Teflon coating electric wires for the in-furnace wiring.

7)The halogen light is not good at the check with eyes of generation of heat.
Please confirm the temperature of the heater and the heating object with the thermometer.

8) Halogen light is the straight like sunlight, only direct exposure has effect on the object to be dried or heated. According to the shape of the work, while turning and rotation reversal, please halogen light shines so uniformly.

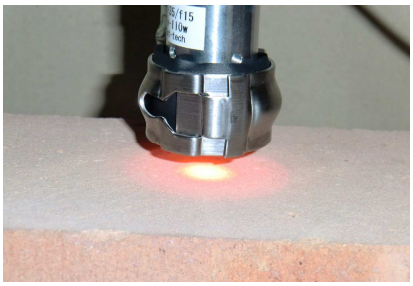
9)Deterioration on the mirror side causes a remarkable performance decrease.
Please soak solvents such as alcohol and benzene into a soft cloth and wipe the dust on the mirror side off lightly.

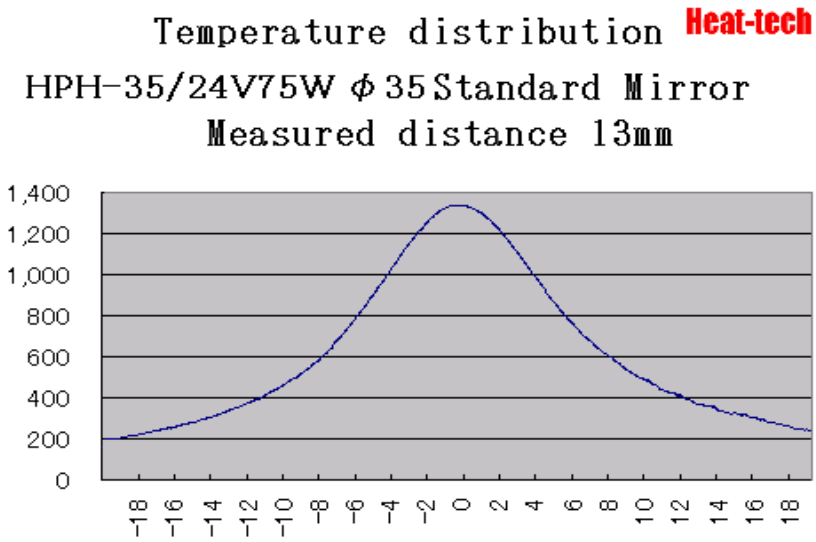
10) Please ground the furnace casing and the frame.

High Speed Heating Halogen Point Heater HPH series

1. High-temperature heating, and heated to 1000 ℃ – 1400 ℃ in just 5 seconds!

High conversion efficiency from electrical to radiant energy,
Concentrate on one point the light of the halogen lamp, reach the temperature 1400 ℃ ~ 1500 ℃.





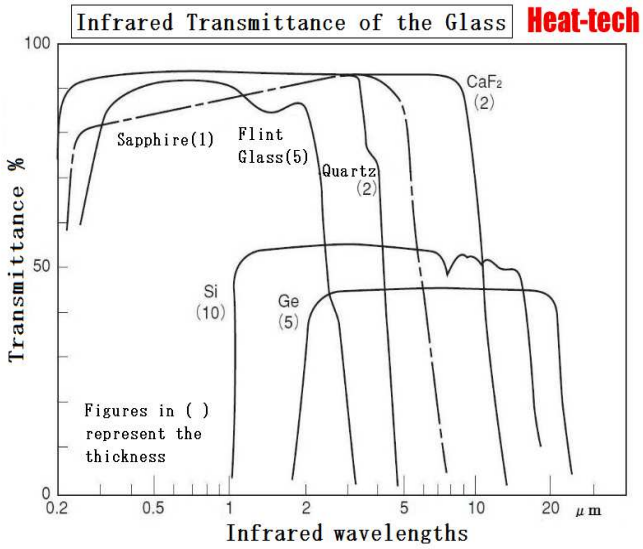
2. Instantaneous heating, the heating time can be shortened.

HPH is to put large amounts of heat at high speed, miniaturization of equipment,
the heating time can be shortened.
Until now, that was over 30 minutes of idling, idle time can be zero.
Since there is no lag temperature, eliminating the waste of waiting time.

Temperature rise so fast, turn OFF the power at idle. save money on electricity conservation.
Electricity rates can be used, per day, costs down 2kw x 0.5h x 12.16 = 12,16 yen.
Year (250 days operation), the cost down is 3040 yen.
In addition, **the annual emissions reduction of 100kg C02 cut off !**
※ unit power rate was calculated as the 12.16 yen / kWh.
※ CO2 emission factors were calculated as 0.4kg-CO2/kwh.

3. Heating through the glass.

Quartz glass hardly absorbs visible light and the near-infrared radiation.
Transmittance is 93%. There are only 7% reflection.
Through the glass, the heating can also work in an atmosphere of inert gas in the vacuum.



4. Temperature can be controlled with high precision.

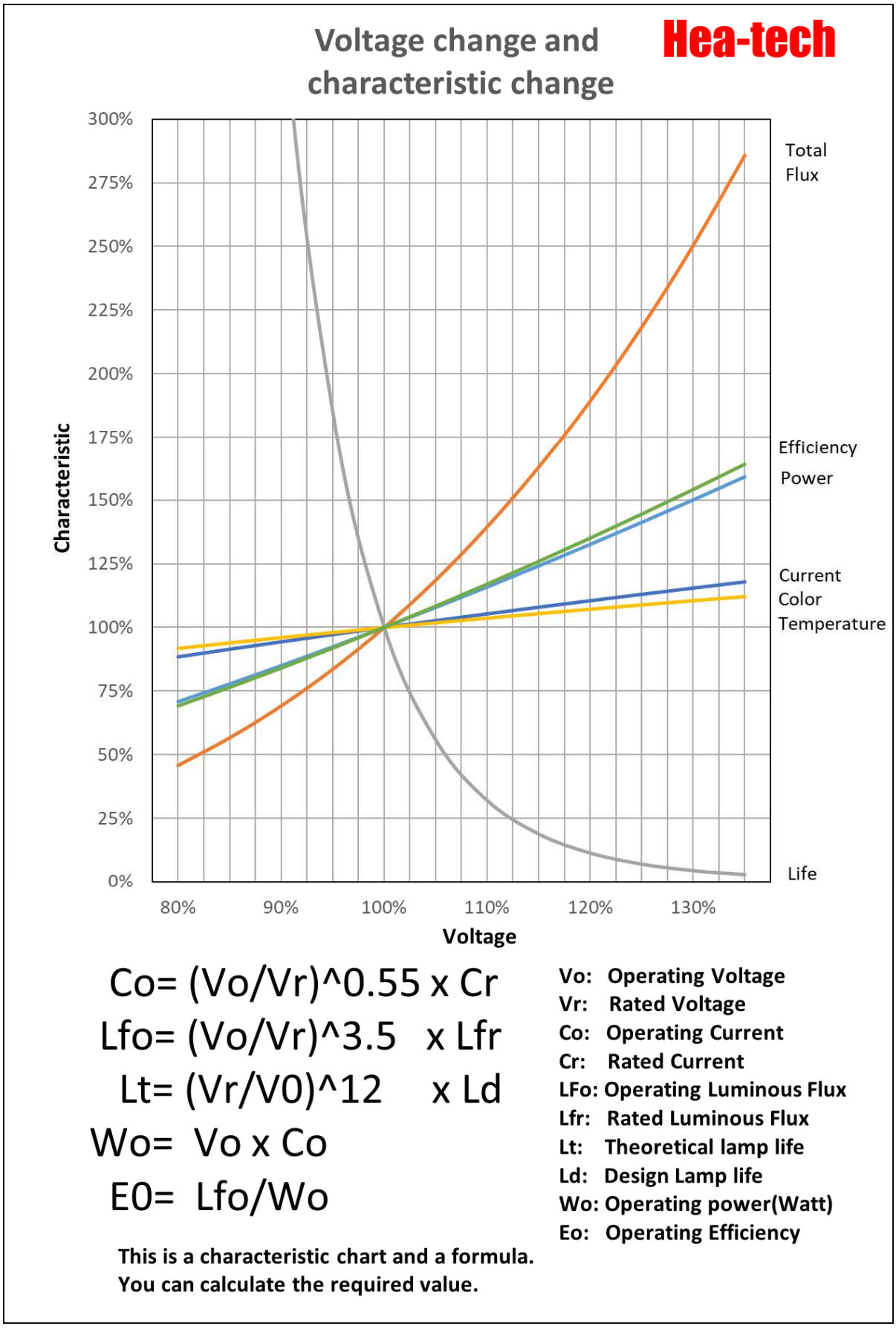
Control any temperature from ambient to maximum temperature with supply voltage.
Supply voltage of the lamp output is capable of any design, the maximum output is around 2.5kw.

5. Clean.

The optical non-contact heating can be the complete heating in the vacuum chamber.

6. Possible long life.

The lamp longevity can be arbitrarily controlled from usually longevity to long life by the supply voltage.



if user lower it by 10% from the rated voltage, design life will be lengthens to 3 times.
If user lower it by 20% from the rated voltage, design life will be lengthens to 9 times.

7. Excellent in safety.

This heater is relatively safe for humans.
Neither dust nor the gases are generated, workers work comfortably.
Moreover, when trouble has came, this rapid cool heater can reduce the risk of ignition of the heated object.
Our Halogen Point Heater concentrates light of a halogen lamp by a concave mirror and heats it hotly.
The small size in the spot is decided depending on the lamp, the size of the mirror,
and the focal length, and the special distribution light design of widening the flash coverage,
and giving arbitrary distribution and worth is also possible.

【 Comparison of optical heating methods 】

Item	Halogen	Infrared	Laser	Xenon
Radiation efficiency	◎	○	△	○～△
Highest temperature	1500℃	700℃	～∞	1800℃
High power	◎	◎	◎	△
Wide Area	◎	◎	△	△
Start-up time	◎	○	◎	◎
Costs	◎	◎	△	△
Size	○	○	△	△
Distance	○	◎	◎	◎
Metal heating	○	×	◎	○
Non-metal heating	◎～△	◎	◎	◎～△
Glass through heating	◎	×	◎	◎
Clean	◎	◎	◎	◎
Permeation heating of translucent	○	×	◎	○
Safety	○	○	△	△

*The wavelength band of the light of the halogen lamp is 0.4-2.5 μm region,
(from visible optical to near-infrared radiation region),
where about 1 μm is assumed to be a peak.
*The semitransparent body (skin, paints, and adhesive, etc.) comparatively enters the inside,
and is heated from the inside.
* The rate of absorption to metal better than the far-infrared light,
to get a large difference between non-metallic materials also good.

【Specification】 (Unit mm)

Model	HPH-12	HPH-18	HPH-30	HPH-35	HPH-60	HPH-80	HPH-120	HPH-160
Mirror size	Φ12	Φ18	Φ30	Φ35	Φ60	Φ80	Φ120	Φ160
Focus (mm)	6	9	15/30/40	12/15/30	15～105	40～∞	45～250	40～1000
Point size mm	Φ1.5	Φ2.5	Φ5～9	Φ5～8	Φ3～21	Φ50～74	Φ18～65	Φ24～300
Max. density w/cm2	85	95	120～25	120～25	150～13	17	120～9	180～8
Max. Temp. ℃	800℃	950℃	1350℃	1350℃	1400℃	950℃	1500℃	1700℃
Rated Voltage-Wattage	12V-20W	12V-40W	24V-75W 12V-110W	24V-75W 12V-110W	24V-150W 24V-300W 36V-450W	100V-500W 200V-500W 100V-1KW 200V-1KW	100V-500W 200V-500W 100V-1KW 200V-1KW	100V-2kW 100V-2.5KW 120V-3KW
Water cooling type (WCU)(W)	×	×	○	○	○	×	○	○
Fan air cooling type (FA)	×	×	×	×	○	×	○	×
Compressed air cooling type (CA)	○	○	○	○	○	○	○	×
Mass	50g	50g	70～100g	80～110g	370～520g	370～520g	2～2.2kg	4.8～5kg

Condenser mirror	Focus	Point size
HPH-30/f15	15mm	≒φ5mm
HPH-30/f30	30mm	≒φ7mm
HPH-30/f40	40mm	≒φ9mm

Lamp base D/#	Volt-Power	Design life	Cooling type
HPH-30CA/24v-75w	24v-75w	400h	Compressed air cooling
HPH-30CA/12v-110w	12v-110w	400h	
HPH-30/24v-75w	24v-75w	400h	Water cooling unit exterior
HPH-30/12v-110w	12v-110w	400h	

Options	Items
P□	Power line length
WCU-30	Water Cooling Unit
Hood-30f□	Antiglare hood

Model specification example Compressed air cooling type HPH-30CA/f15/24v-75w/P3m

Condenser mirror	Focus	Point size
HPH-35/f12	12mm	≒φ5mm
HPH-35/f15	15mm	≒φ6mm
HPH-35/f30	30mm	≒φ8mm

Lamp base D/#	Volt-Power	Design life	Cooling type
HPH-35CA/24v-75w	24v-75w	400h	Compressed air cooling
HPH-35CA/12v-110w	12v-110w	400h	
HPH-35/24v-75w	24v-75w	400h	Water cooling unit exterior
HPH-35/12v-110w	12v-110w	400h	

Options	Items
HPH-35/HRG	Heat-resistant glass
HPH-35/QG	Quartz glass
P□	Power line length
WCU-30	Water Cooling Unit
Hood-35f□	Antiglare hood

Model specification example Compressed air cooling type HPH-35CA/f15/24v-75w/P3m

Condenser mirror	Focus	Point size
HPH-60/f15	15mm	≒φ3/6/7mm
HPH-60/f30	30mm	≒φ4/7/8mm
HPH-60/f60	60mm	≒φ7/11/14mm
HPH-60/f105	105mm	≒φ10/18/21mm
HPH-60/f∞	Parallel	≒φ58mm

Lamp base D/#	Volt-Power	Design life	Cooling type
HPH-60FA/24v-150w	24v-150w	500h	Fan air cooling type
HPH-60FA/24v-300w	24v-300w	800h	
HPH-60FA/36v-450w	36v-450w	150h	
HPH-60CA/24v-150w	24v-150w	500h	Compressed air cooling
HPH-60CA/24v-300w	24v-300w	800h	
HPH-60CA/36v-450w	36v-450w	150h	
HPH-60/24v-150w	24v-150w	500h	Water cooling unit exterior
HPH-60/24v-300w	24v-300w	800h	
HPH-60/36v-450w	36v-450w	150h	

Options	Items
HPH-60/HRG	Heat-resistant glass
HPH-60/QG	Quartz glass
P□	Power line length
WCU-60	Water Cooling Unit
Hood-60f□	Antiglare hood

Model specification example Fan air cooling type HPH-60FA/f30/36v-450w/P3m

Condenser mirror	Focus	Point size
HPH-80/f40	40mm	≒φ50mm
HPH-80/f∞	Parallel	≒φ74mm

Lamp base D/#	Volt-Power	Design life	Cooling type
HPH-80CA/100v-500w	100v-500w	800h	Compressed air cooling
HPH-80CA/100v-1kw	100v-1kw	800h	
HPH-80CA/200v-1kw	200v-1kw	800h	

Options	Items
P□	Power line length

Model specification example Compressed air cooling type HPH-80CA/f∞/200v-1kw/P3m

Condenser mirror	Focus	Point size
HPH-120/f45	45mm	≒φ18mm
HPH-120/f100	100mm	≒φ328mm
HPH-120/f260	260mm	≒φ65mm

Lamp base D/#	Volt-Power	Design life	Cooling type
HPH-120FA/100v-500w	100v-500w	800h	Fan air cooling type
HPH-120FA/100v-1kw	100v-1kw	800h	
HPH-120FA/200v-1kw	200v-1kw	800h	
HPH-120CA/100v-500w	100v-500w	800h	Compressed air cooling
HPH-120CA/100v-1kw	100v-1kw	800h	
HPH-120CA/200v-1kw	200v-1kw	800h	
HPH-120/100v-500w	100v-500w	800h	Water cooling built-in
HPH-120/100v-1kw	100v-1kw	800h	
HPH-120/200v-1kw	200v-1kw	800h	

Options	Items
HPH-120/HRG	Heat-resistant glass
HPH-120/NG	Neoceram glass
HPH-120/QG	Quartz glass
P□	Power line length

Model specification example Fan air cooling type HPH-120FA/f45/200v-1kw/P3m

Condenser mirror	Focus	Point size
HPH-160W/f40	45mm	≒φ24/φ30/φ36mm
HPH-160W/f80	100mm	≒φ30/φ38/φ45mm
HPH-160W/f160	260mm	≒φ54/φ68/φ81mm
HPH-160W/f320	100mm	≒φ105/φ130/φ158mm
HPH-160W/f1000	260mm	≒φ200/φ250/φ300mm

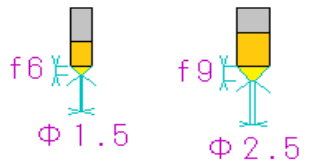
Lamp base D/#	Volt-Power	Design life	Cooling type
HPH-160/100v-2kw	100v-2kw	200h	Water cooling built-in
HPH-160/100v-2.5kw	100v-2.5kw	200h	
HPH-160/120v-3kw	120v-3kw	200h	

Options	Items
HPH-160/HRG	Heat-resistant glass
HPH-160/NG	Neoceram glass
HPH-160/QG	Quartz glass
P□	Power line length

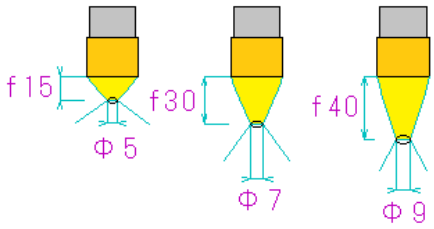
Model specification example Water cooling built-in type HPH-160W/f40/100v-2.5kw/P3m

【 Focus and Point size 】

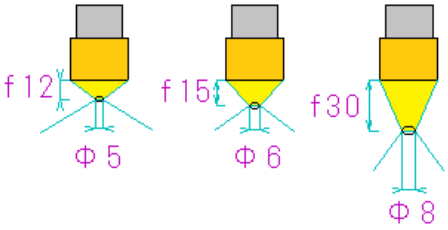
HPH-12 HPH-18



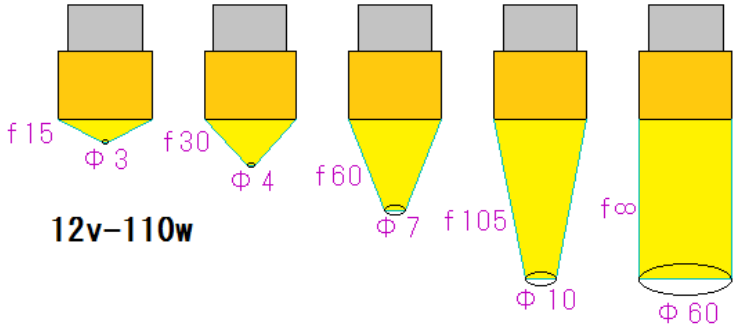
HPH-30



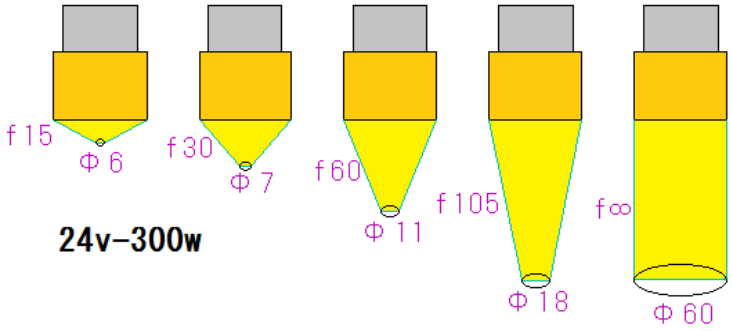
HPH-35



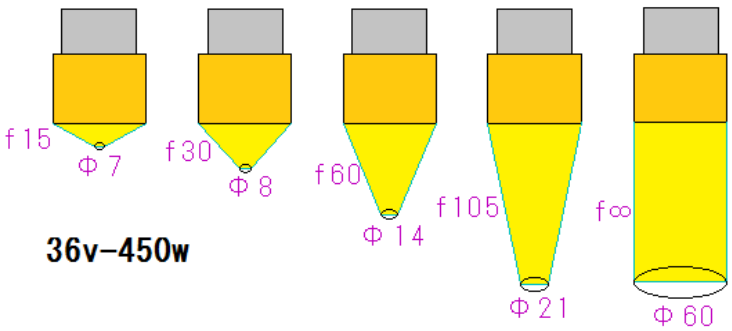
HPH-60



12v-110w



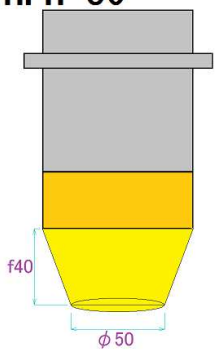
24v-300w



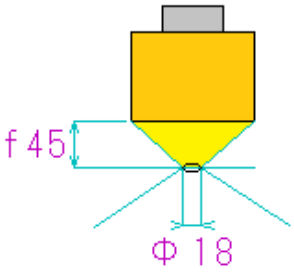
36v-450w

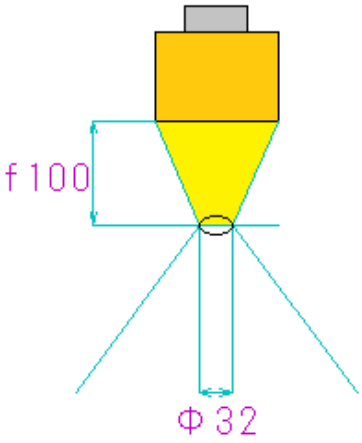
【 Focus and Point size 】

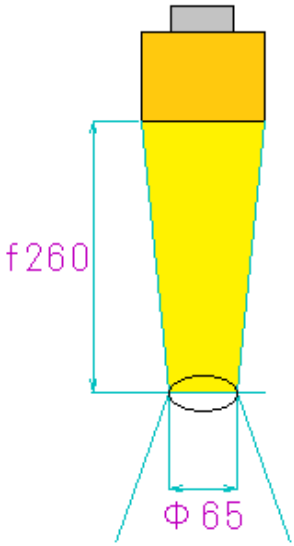
HPH-80



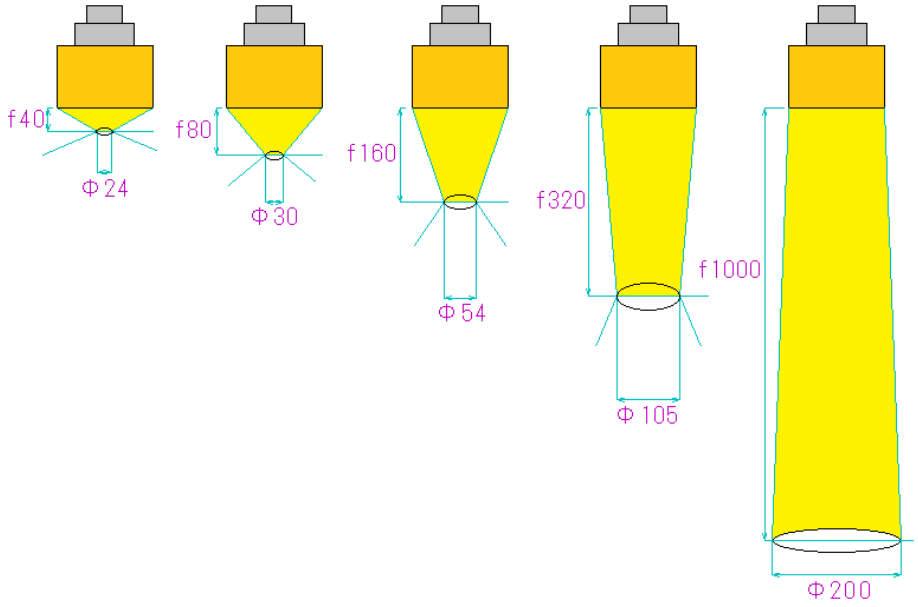
HPH-120



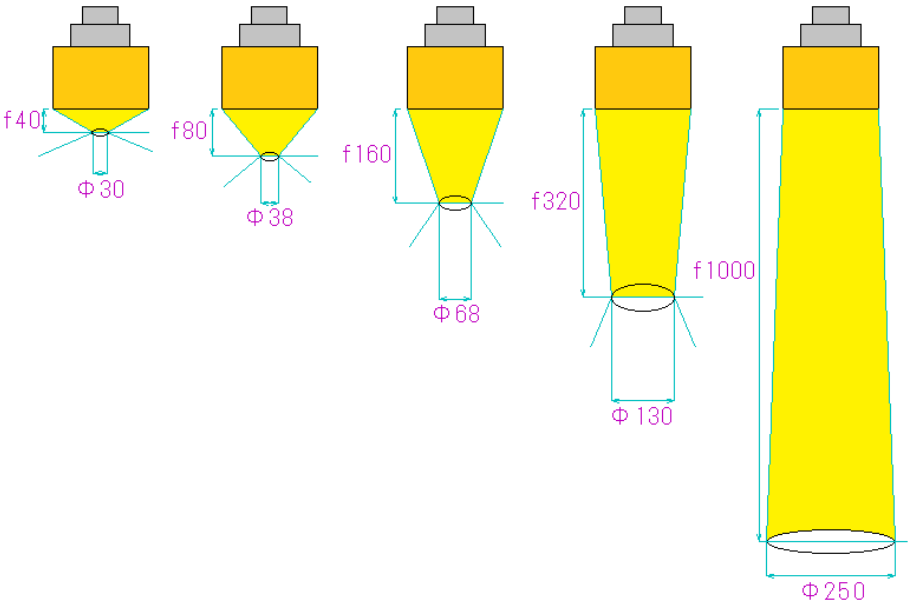




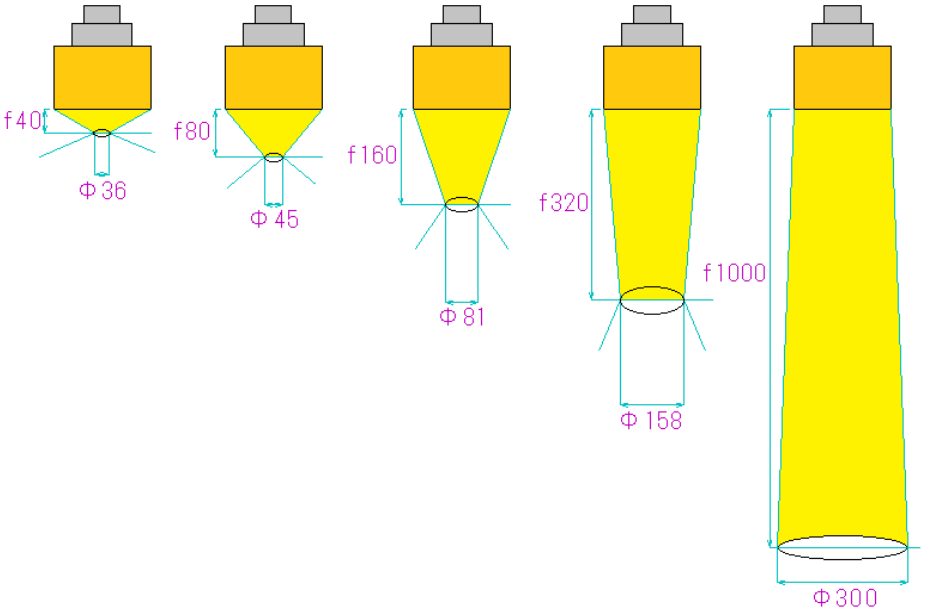
HPH-160W/100V-2kW Focus & Point Size



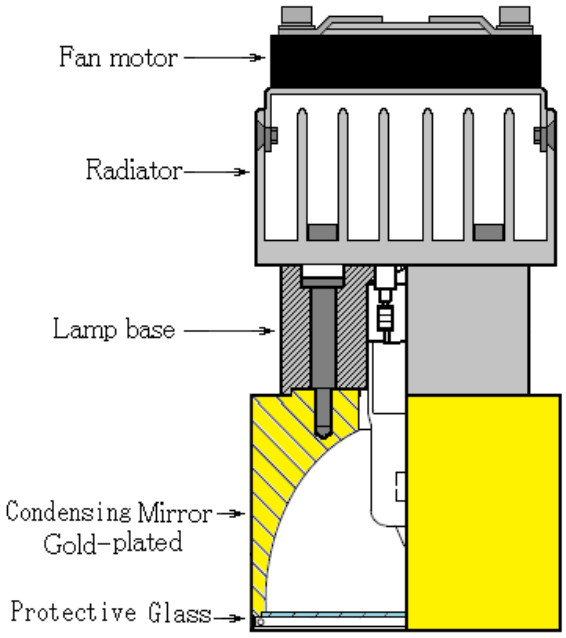
HPH-160W/100V-2.5kW Focus & Point Size



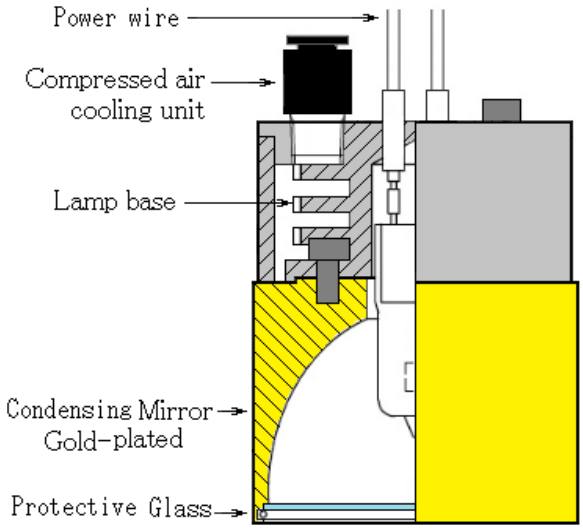
HPH-160W/120V-3kW Focus & Point Size



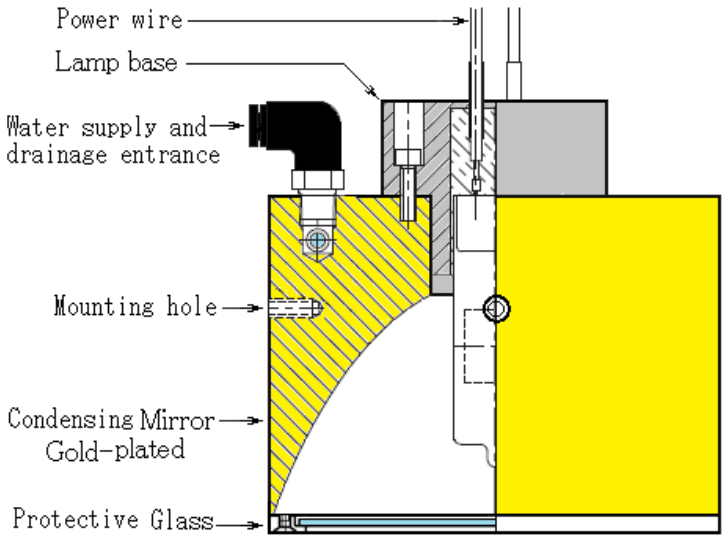
6-1Air cooled fan installed type



6-2.Compressed air cooling type



6-3.Water cooling type



7 Method of selecting the model

7-1. Confirm the heating range.
7-2. Select a heater with an appropriate point (=focal diameter) in the table of "Point (=Focal diameter), Power density, Focus (= Focal length) and Mirror size (= Heater diameter).".
When heating combustible materials such as paper and resin, choose a product with low power density.
Metal heating selects products with high power density.

Point	Density	Focus	Mirror size	Model
Φmm	w/cm2	mm	Φmm	□= None/W/FA/PA
1.5	80	6	Φ12	HPH-12/f6/12V-20W
2.5	95	9	Φ18	HPH-18/f9/12V-40W
5	110	12	Φ35	HPH-35□/f12/24V-75W
5	120	15	Φ30	HPH-30□/f15/24V-75W
5	160	12	Φ35	HPH-35□/f12/12V-110W
5	150	15	Φ60	HPH-60□/f15/24V-150W
5	175	15	Φ30	HPH-30□/f15/12V-110W
6	84	15	Φ35	HPH-35□/f15/24V-75W
6	115	30	Φ60	HPH-60□/f30/24V-150W
6	122	15	Φ35	HPH-35□/f15/12V-110W
6	170	15	Φ60	HPH-60□/f15/24V-300W
7	40	30	Φ30	HPH-30□/f30/24V-75W
7	58	30	Φ30	HPH-30□/f30/12V-110W
7	180	15	Φ60	HPH-60□/f15/36V-450W
8	32	30	Φ35	HPH-35□/f30/24V-75W
8	52	30	Φ35	HPH-35□/f30/12V-110W
8	135	30	Φ60	HPH-60□/f30/24V-300W
8	140	30	Φ60	HPH-60□/f30/36V-450W
9	25	40	Φ30	HPH-30□/f40/24V-75W
9	36	40	Φ30	HPH-30□/f40/12V-110W
10	42	60	Φ60	HPH-60□/f60/24V-150W
11	50	60	Φ60	HPH-60□/f60/24V-300W
14	15	105	Φ60	HPH-60□/f105/24V-150W
14	52	60	Φ60	HPH-60□/f60/36V-450W
18	18	105	Φ60	HPH-60□/f105/24V-300W
18	85	45	Φ120	HPH-120□/f45/100V-500W
21	19	105	Φ60	HPH-60□/f105/36V-450W
21	125	45	Φ120	HPH-120□/f45/100V-1kW
22	28	100	Φ120	HPH-120□/f100/100V-500W
24	140	40	Φ160	HPH-160W/f40/100V-2kW
26	40	100	Φ120	HPH-120□/f100/100V-1kW
30	95	80	Φ160	HPH-160W/f80/100V-2kW
30	140	40	Φ160	HPH-160W/f40/100V-2.5kw
36	140	40	Φ160	HPH-160W/f40/100V-3kw
38	95	80	Φ160	HPH-160W/f80/100V-2.5kw
45	6	260	Φ120	HPH-120□/f250/100V-500W
45	95	80	Φ160	HPH-160W/f80/100V-3kw
50	10	40	Φ80	HPH-80□/f40/100V-1kW
54	9	260	Φ120	HPH-120□/f250/100V-1kW
54	30	160	Φ160	HPH-160W/f160/100V-2kW
60	1	f∞	Φ60	HPH-60□/f∞/24V-150W
60	1	f∞	Φ60	HPH-60□/f∞/24V-300W
60	2	f∞	Φ60	HPH-60□/f∞/36V-450W
68	30	160	Φ160	HPH-160W/f160/100V-2.5kw
74	2	f∞	Φ80	HPH-80□/f∞/100V-1kW
81	30	160	Φ160	HPH-160W/f160/100V-3kw
105	8	320	Φ160	HPH-160W/f320/100V-2kW
130	8	320	Φ160	HPH-160W/f320/100V-2.5kw
158	8	320	Φ160	HPH-160W/f320/100V-3kw
200	2	1000	Φ160	HPH-160W/f1000/100V-2kW
250	2	1000	Φ160	HPH-160W/f1000/100V-2.5kw
300	2	1000	Φ160	HPH-160W/f1000/100V-3kw

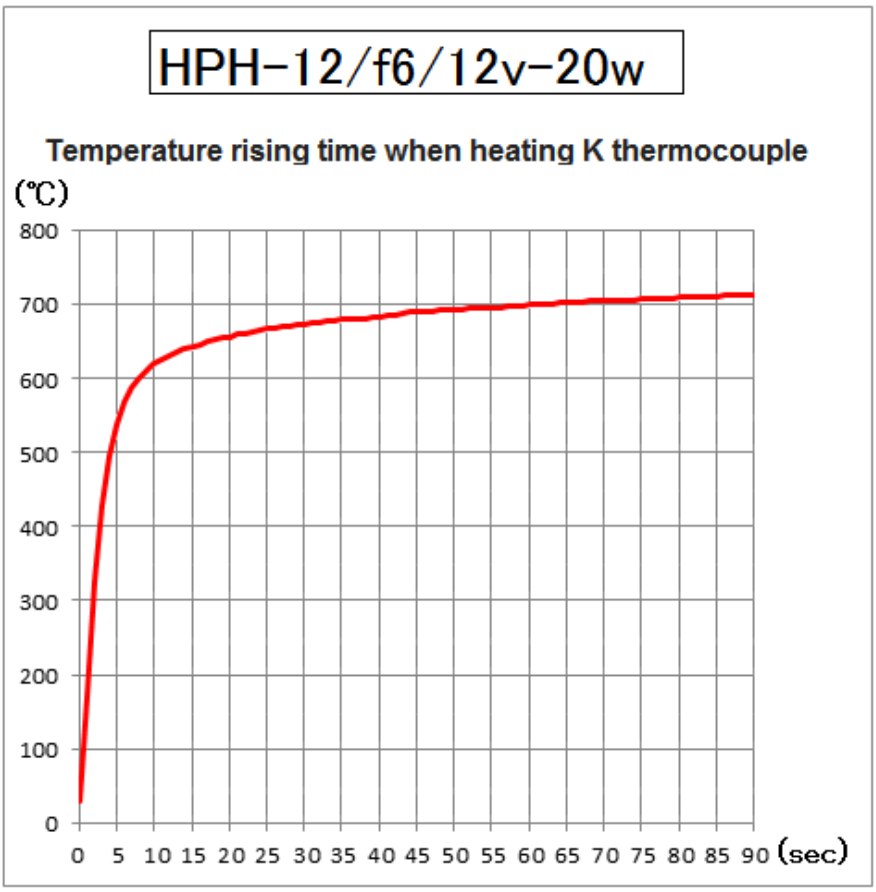
7-3. Select the cooling method for the heater.

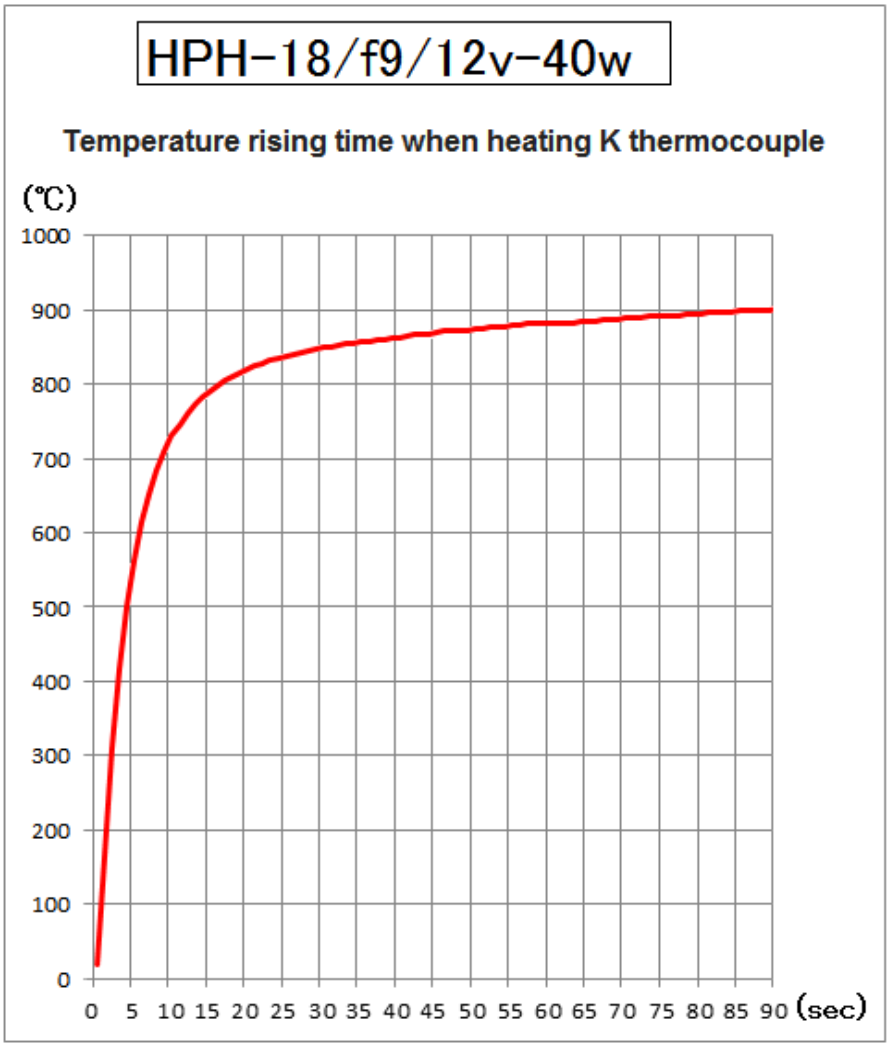
■ Fan air cooling type can be used only with heater controller.
■ Compressed air cooling type requires a heater controller and air compressor, but it is small.
■ Water cooling type requires a heater controller and a chiller (water cooler),
but it can also be used in a vacuum container.

7-4. Select a heater controller according to the application.

■ Manual control → HCV series
■ Automatic temperature control → HHC 2 series
■ Step temperature control → SSC series

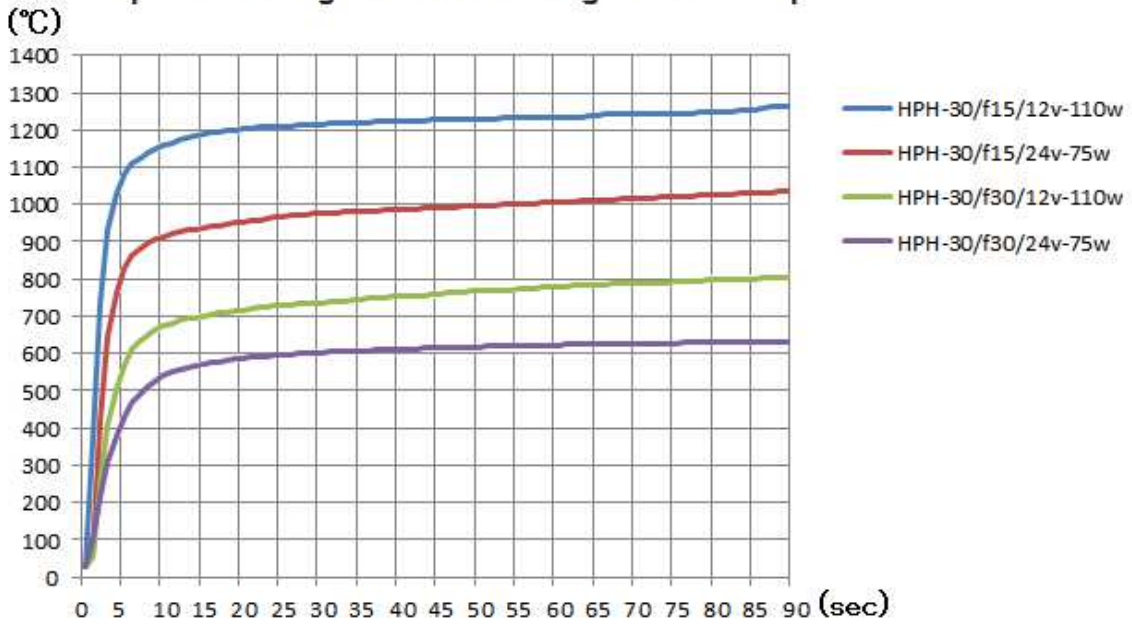
8 Temparature rising time





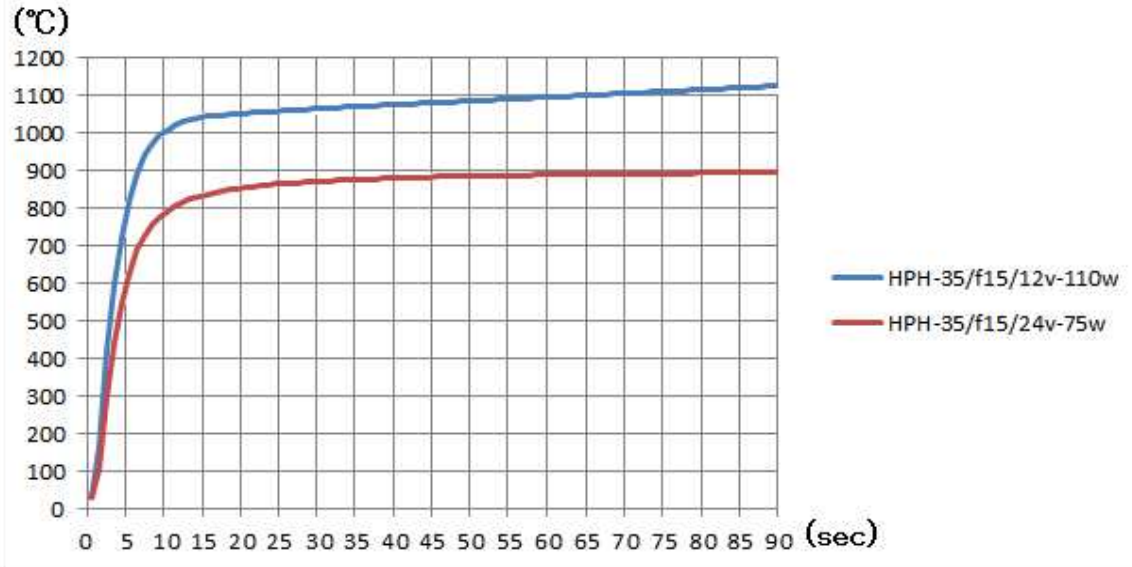
HPH-30 series

Temperature rising time when heating K thermocouple



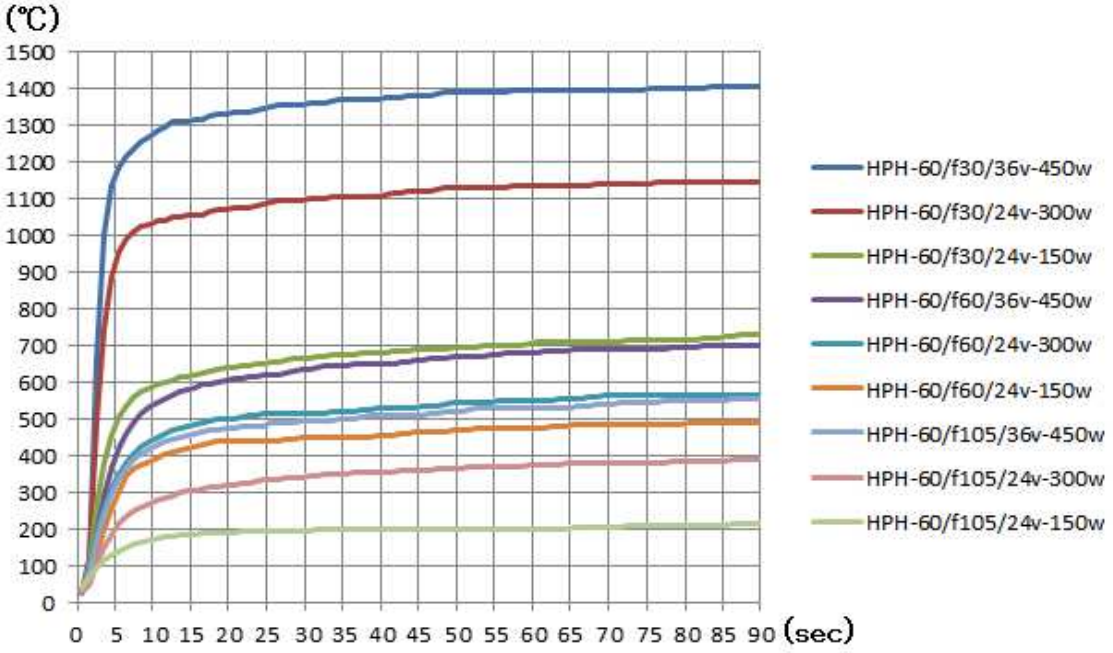
HPH-35 series

Temperature rising time when heating K thermocouple



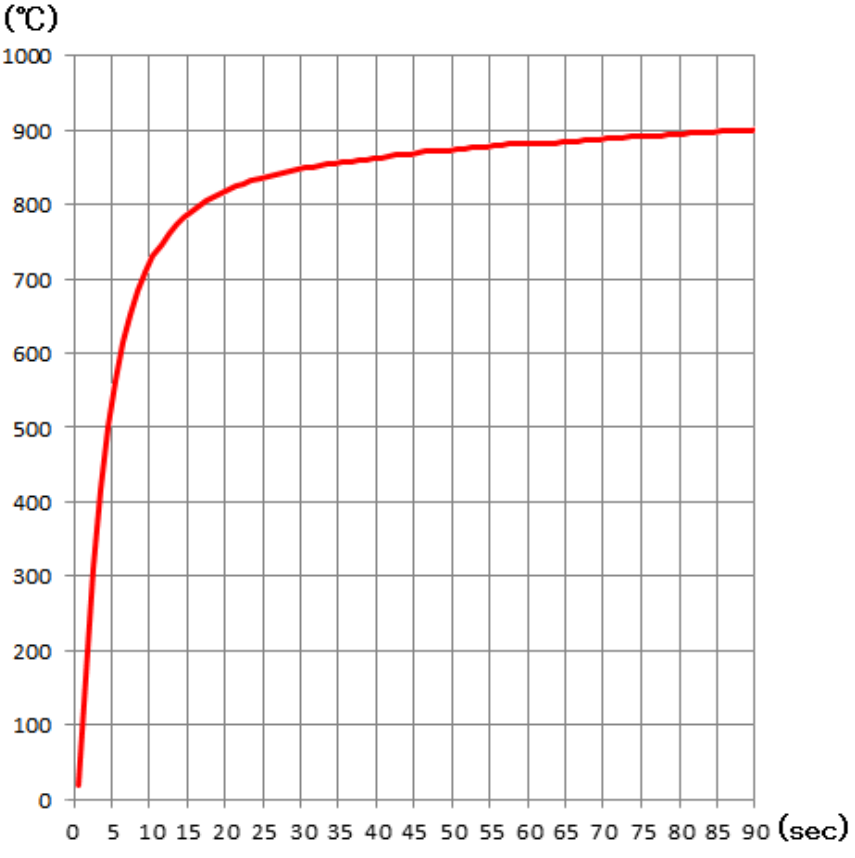
HPH-60 series

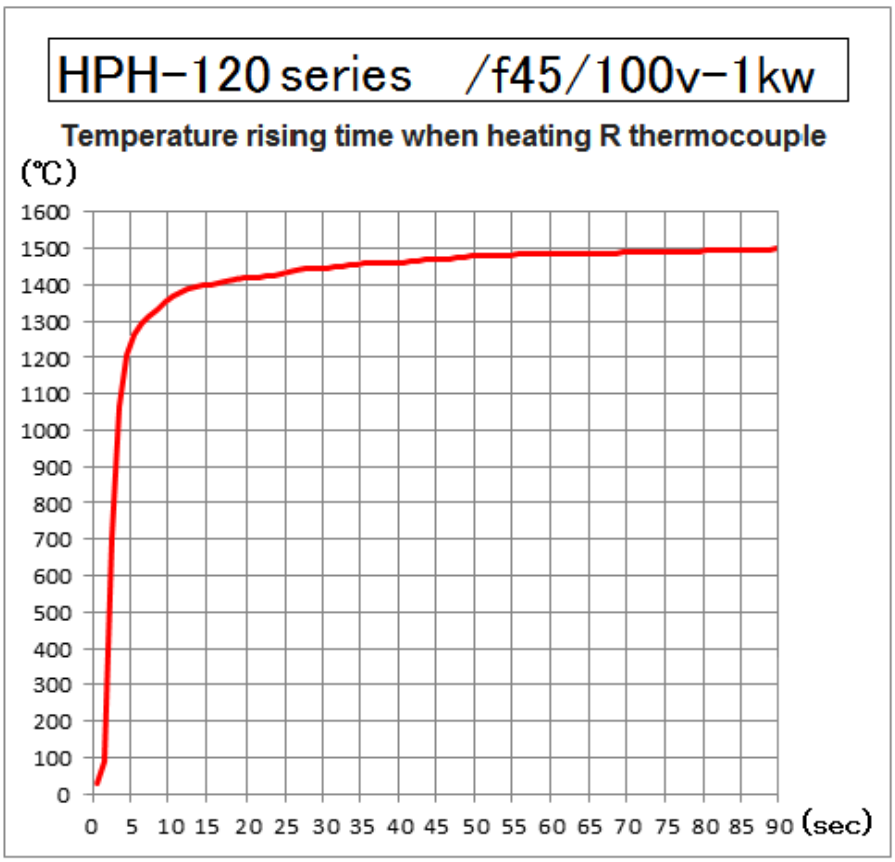
Temperature rising time when heating K thermocouple

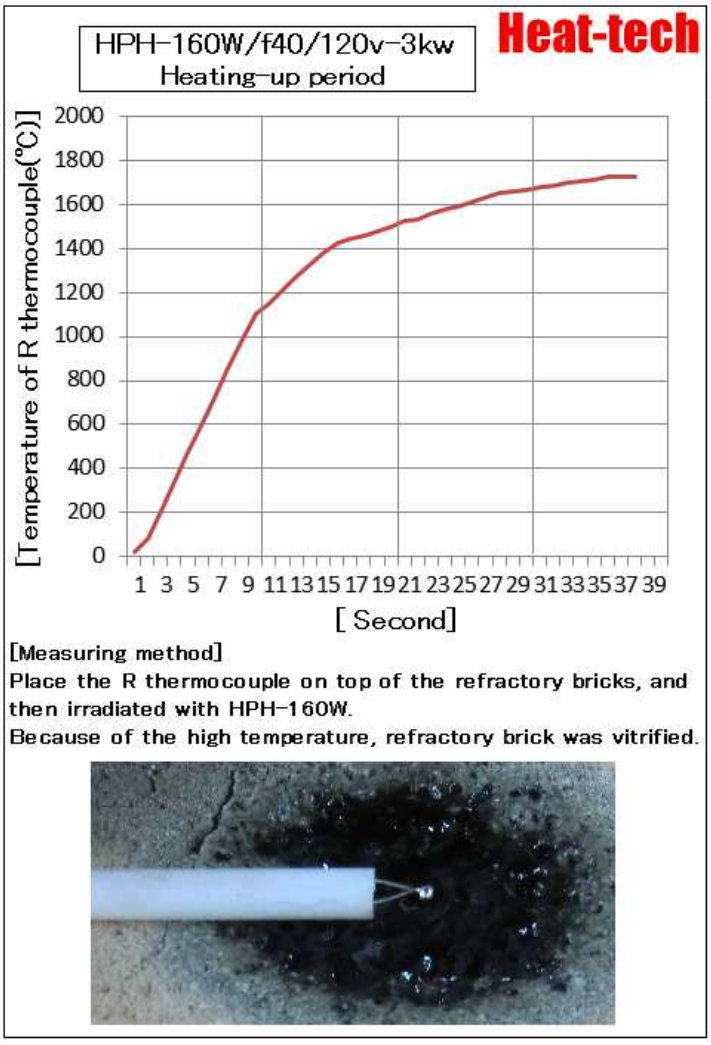


HPH-80/f40/100v-1kw

Temperature rising time when heating K thermocouple



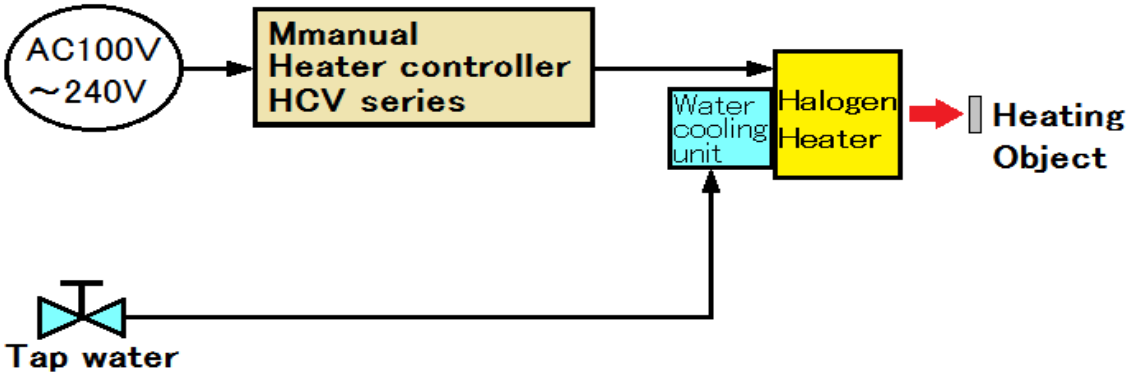


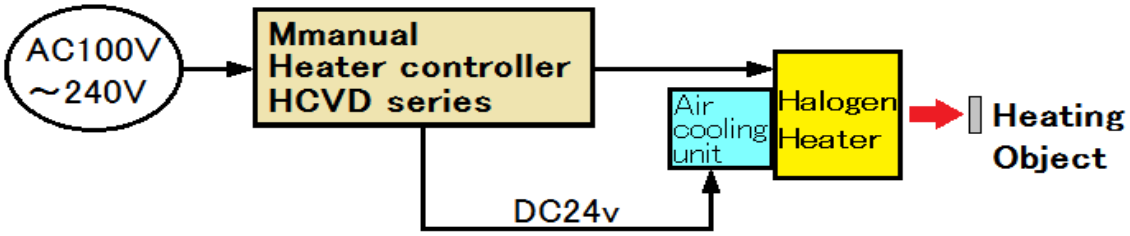


[Measuring method]
Place the R thermocouple on top of the refractory bricks, and then irradiated with HPH-160W.
Because of the high temperature, refractory brick was vitrified.

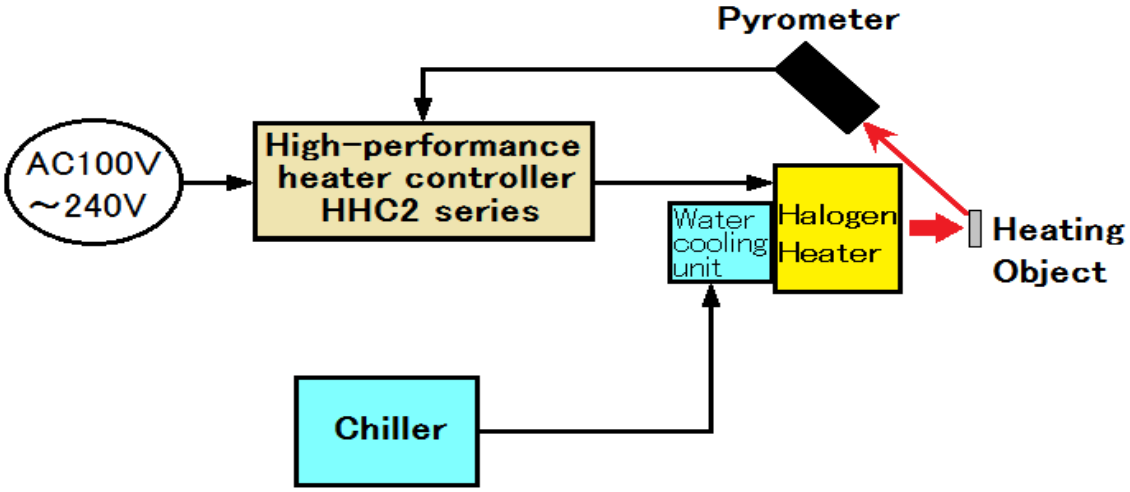
【 Example of wiring 】

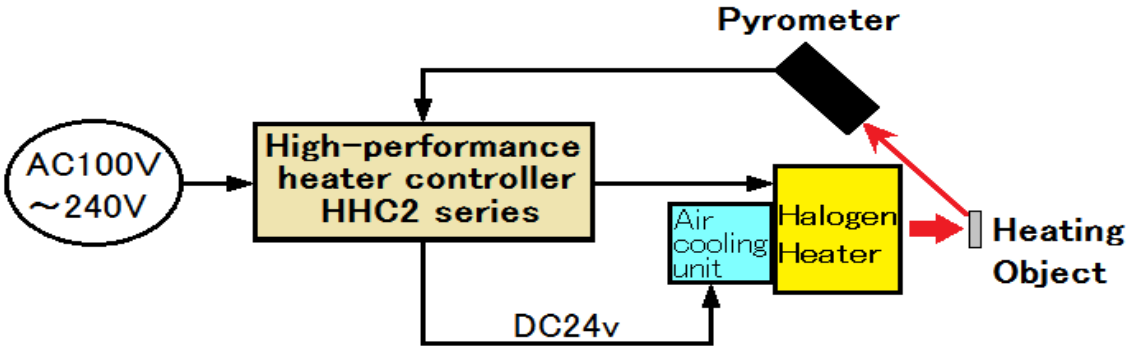
【Manual control】





【Automatic control】





【 Infrared Absorption Rate 】

Please confirm the index of absorption of infrared rays in this table.

The material absorbed by about 0.5 = 50% or more is suitable for the infrared heating.

【 Organism 】	Infrared absorption rate(=Emissivity)				
Wavelength	1	1.6	2.4	3～5	8～14
Material	μm	μm	μm	μm	μm
Human skin					0.98
Natural wood				0.9-0.95	0.9-0.95
Charcoal					0.96
Carbon soot	0.95	0.95		0.95	0.95～0.97
Carbon graphite	0.85	0.85	0.85	0.85	0.8
Silicon carbide				0.9	0.9
Paper black					0.9
Paper black matted					0.94
Paper green					0.85
Paper red					0.76
Paper white					0.7～0.9
Paper yellow					0.72
Cloth black					0.98
Cloth high gauge knit	0.75	0.8	0.85	0.85	0.95
Plastic				0.60～0.95	0.95
Asphalt	0.85	0.85		0.9	0.85
Tar					0.79～0.84
Tar paper					0.91～0.93
General Paint				0.87-0.96	
Lacquer bakelite					0.93
Lacquer black matted					0.96～0.98
Lacquer glossy black spray iron					0.87
Lacquer white luster					0.8～0.95
Shellac black matted					0.91
Shellac black luster					0.82
Aluminum paint				0.69	
Rubber Hard				0.9	0.95
Rubber Gray Soft				0.86	0.86

【 Mineral 】	Infrared absorption rate(=Emissivity)				
Wavelength	1	1.6	2.4	3～5	8～14
Material	μm	μm	μm	μm	μm
Granular silica powder					0.48
Silica powder					0.3
Polished glass surfaces				0.91-0.96	
Pottery				0.86	0.92
Porcelain pottery					0.70～0.75
Ceramic	0.4	0.5	0.85-0.95	0.95	0.9
Alumina Al2O3	0.3	0.3	0.3	0.4	0.6
Brick Red	0.8	0.8	0.8	0.93	0.9
Brick White Fireproof	0.3	0.35			0.8
Brick Silica	0.55	0.6			0.8
Brick Sillimanite	0.6	0.6			0.6
Asbestos	0.9	0.9		0.9	0.85
Mud					0.9-0.98
Unglazed clay					0.91
Raw clay				0.85-0.95	0.95
Concrete	0.65	0.7	0.9	0.9	0.9
Cement					0.54-0.96
Gravel				0.95	0.95
Sand				0.6-0.9	0.6-0.9
Coarse emery					0.85
Basalt				0.7	0.95
Polished gray marble					0.93
Mica					0.72
Limestone				0.4-0.98	0.98
Plaster				0.4-0.97	0.8-0.95
Stucco					0.91
Snow					0.8-0.9
Water thickness least 0.1mm				0.96	0.95～0.98
Ice				0.96	0.98

【 Magnetic metal 】	Infrared absorption rate(=Emissivity)				
Wavelength	1	1.6	2.4	3～5	8～14
Material	μm	μm	μm	μm	μm
Iron non-oxidation side	0.35	0.3		0.18	0.1
Iron oxidation side	0.85	0.85	0.85	0.85	0.8
Iron rust side		0.6-0.9			0.5-0.7
Iron melt	0.35	0.4-0.6			
Cast iron grinding side				0.21	
Cast iron oxidation side	0.85			0.58	0.6-0.95
Cast iron non-oxidation side	0.35	0.3			0.2
Cast iron melt	0.35	0.3-0.4			0.2-0.3
Steel cooling roll	0.8-0.9	0.8-0.9			0.7-0.9
Steel grinding seat	0.35	0.25		0.07	0.1
Steel melt	0.35	0.25-0.4			
Steel oxidation side	0.8-0.9	0.8-0.9			0.7-0.9
Stainless steel	0.35	0.2-0.9			0.1-0.8
Inconel non-oxidation side	0.3	0.3	0.3	0.28	0.1
Inconel oxidation side	0.85	0.85	0.85	0.85	0.85
Inconel Sand blast	0.3-0.4	0.3-0.6			0.3-0.6
Inconel grinding side	0.2-0.5	0.25			0.15

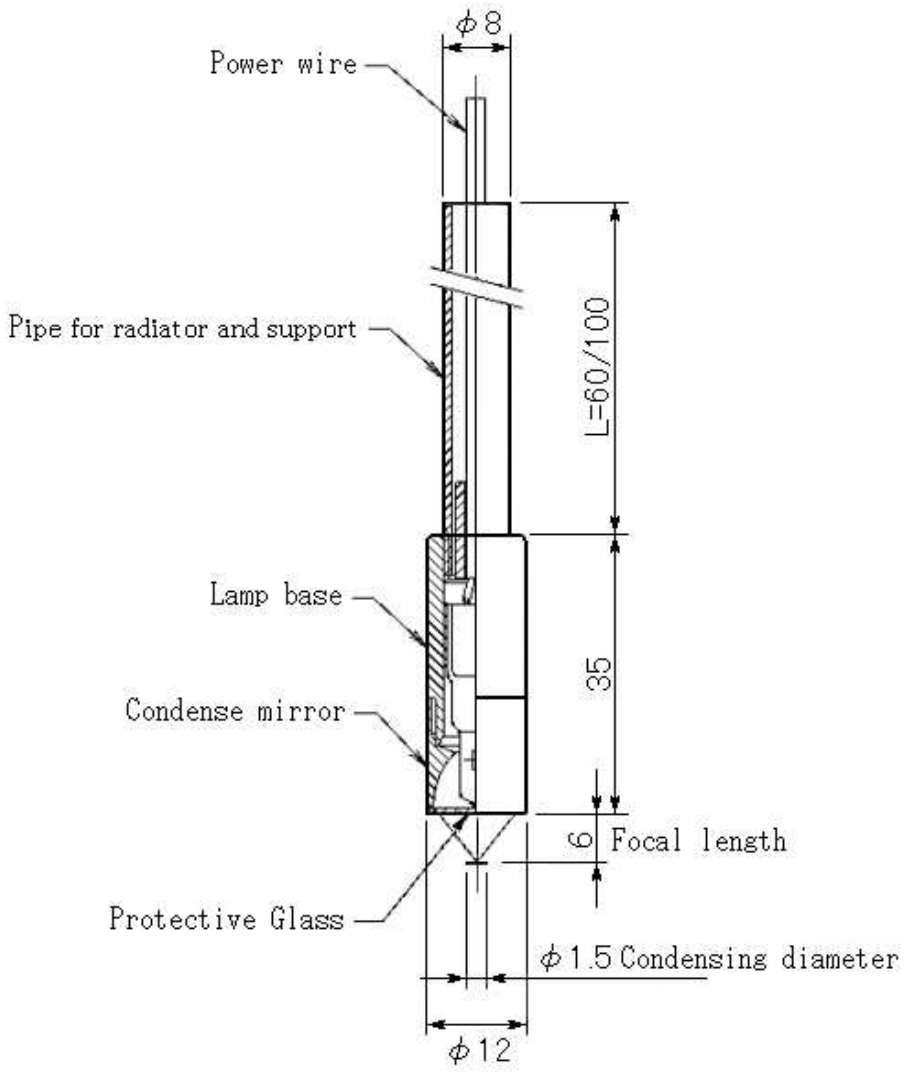
【 Infrared Absorption Rate 】

Please confirm the index of absorption of infrared rays in this table.

The material absorbed by about 0.5 = 50% or more is suitable for the infrared heating.

【Precious / Nonferrous metal】	Infrared absorption rate(=Emissivity)				
Wavelength	1	1.6	2.4	3～5	8～14
Material	μm	μm	μm	μm	μm
Platinum	0.27	0.22	0.18	0.1-0.04	0.07
Gold	0.05	0.02	0.02	0.02	0.02
Silvery grinding side				0.02	
Silver non-oxidation side	0.01	0.01	0.01		0.01
Silver oxidation side	0.05	0.04	0.04	0.03	0.02
Copper mirror side				0.02	
Copper non-oxidation side	0.06	0.05	0.04	0.04	0.03
Copper rough side		0.05-0.2		0.072-0.50	
Copper oxidation side	0.85	0.85	0.85	0.85	0.8
Brass specular				0.052	
Brass non-oxidation	0.2	0.18		0.1	0.03
Brass oxidation side	0.7	0.7	0.7	0.46-0.61	0.6
Lead non-oxidation side	0.35	0.28		0.16	0.13
Lead rough side	0.65	0.6			0.4
Lead oxidation side	0.65	0.65	0.65	0.63	0.65
Lead grinding side				0.05	
Tin non-oxidation side	0.25-0.4	0.1-0.28	0.12	0.09	0.06
Tin oxidation side	0.6	0.6	0.6		0.6
Tin luster side				0.05	
Zinc non-oxidation side	0.5	0.32	0.1	0.05	0.04
Zinc oxidation side	0.6	0.55		0.11	0.3
Zinc galvanization steel board				0.23	
Aluminum specular				0.02	
Aluminum usual grinding side				0.04	
Aluminum non-oxidation side	0.13	0.09	0.08	0.05	0.025
Aluminum oxidation side	0.4	0.4	0.4	0.08-0.3	0.35
Aluminum alloy A3003 rough side	0.2-0.8	0.2-0.6			0.1-0.3
Aluminum alloy A3003 grinding side	0.1-0.2	0.02-0.1			
Aluminum alloy A3003 oxidation side		0.4			0.3

【 Rare earth 】	Infrared absorption rate(=Emissivity)				
Wavelength	1	1.6	2.4	3～5	8～14
Material	μm	μm	μm	μm	μm
Mercury		0.05-0.15			
Titanium non-oxidation side	0.55	0.5	0.42	0.3	0.15
Titanium oxidation side	0.8	0.8			0.6
Tungsten	0.39	0.3	0.2	0.13	0.06
Tungsten grinding side	0.35-0.4	0.1-0.3		0.04	
Palladium	0.28	0.23		0.08	0.05
Rhodium	0.25	0.18		0.07	0.05
Molybdenum non-oxidation side	0.33	0.25		0.07	0.1
Molybdenum oxidation side	0.8	0.8	0.8	0.8	0.8
Magnesium non-oxidation side	0.27	0.24	0.2	0.12	0.07
Magnesium oxidation side	0.75	0.75	0.75		0.75
Magnesite			0.6		
Monel non-oxidation side	0.25	0.22	0.2	0.1	0.1
Monel oxidation side	0.7	0.7	0.7	0.45	0.7
Cobalt non-oxidation side	0.32	0.28		0.18	0.04
Cobalt oxidation side	0.7	0.65			0.35
Nickel non-oxidation side	0.35	0.25		0.15	0.04
Nickel oxidation side	0.85	0.85			0.85
Nickel grinding side				0.05	
Nickel electrolysis	0.2-0.4	0.1-0.3			
Chrome non-oxidation side	0.43	0.34		0.15	0.07
Chrome oxidation side	0.75	0.8			0.85
Nichrome non-oxidation side	0.3	0.28			0.2
Nichrome oxidation side	0.85	0.85	0.85	0.9-0.95	0.85
Nichrome grinding side				0.08	
Nichrome luster side				0.65	

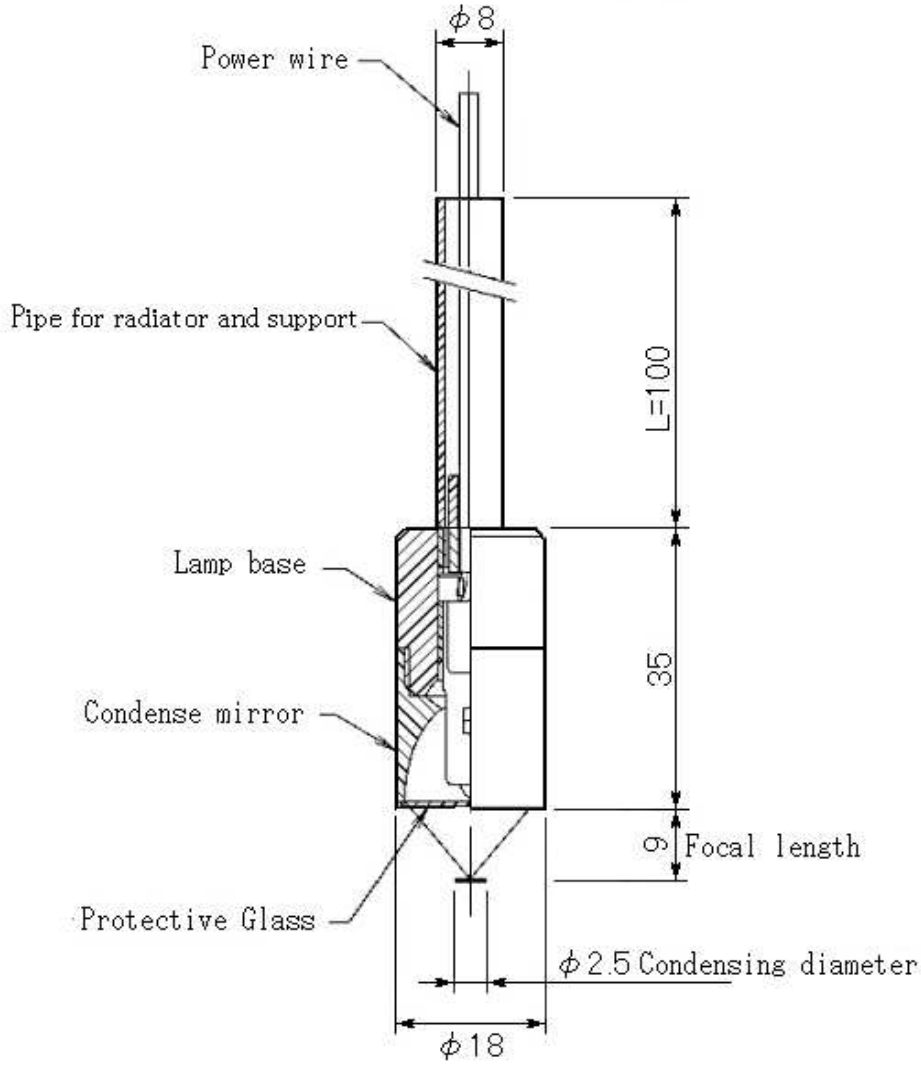


Specified by custom order.
L□ Aluminum tube length
P□ Power line length

Mirror	Φ12mm
Focus	6mm
Focus Point	Φ1.5mm
Volt-Power	12v-20w
D/#	HPH-12/f6/12v-20w/L□/P□m
Model	Halogen Point Heater

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

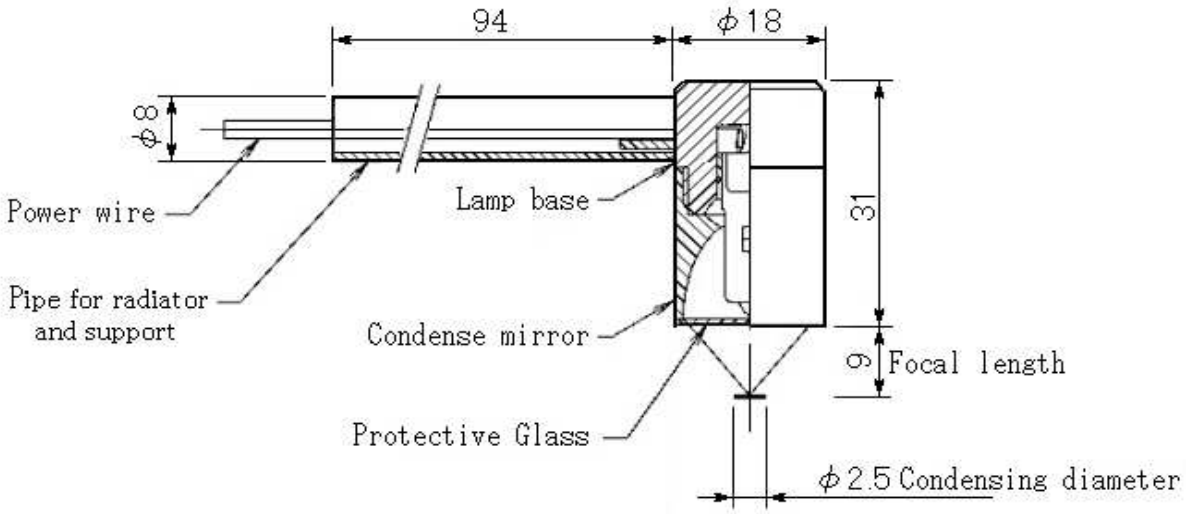


Specified by custom order.
L□ Aluminum tube length
P□ Power line length

Mirror	Φ18mm
Focus	9mm
Focus Point	Φ2.5mm
Volt-Power	12v-40w
D/#	HPH-18/f9/12v-40w/L□/P□m
Model	Halogen Point Heater

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

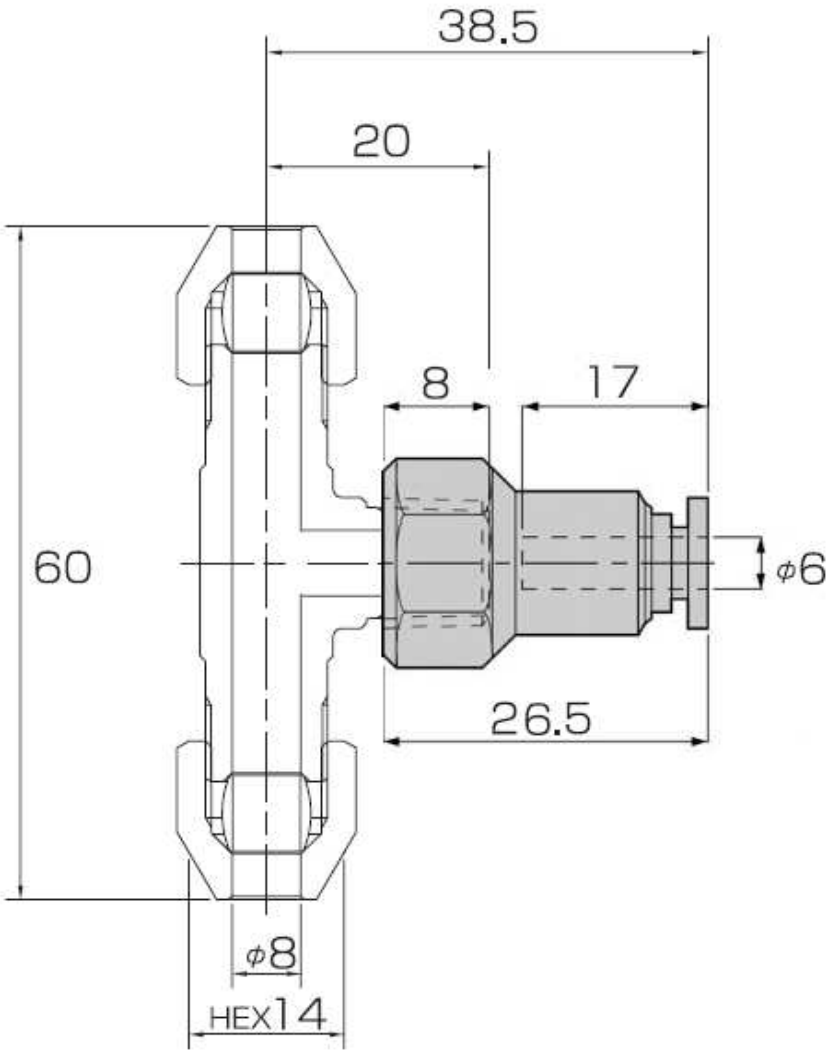


Specified by custom order.
L□ Aluminum tube length
P□ Power line length

Mirror	Φ18mm
Focus	9mm
Focus Point	Φ2.5mm
Volt-Power	12v-40w
D/#	HPH-18L/f9/12v-40w/L□/P□m
Model	Halogen Point Heater

Date	2020/1/6	Design	Y.Shimoda

Heat-tech

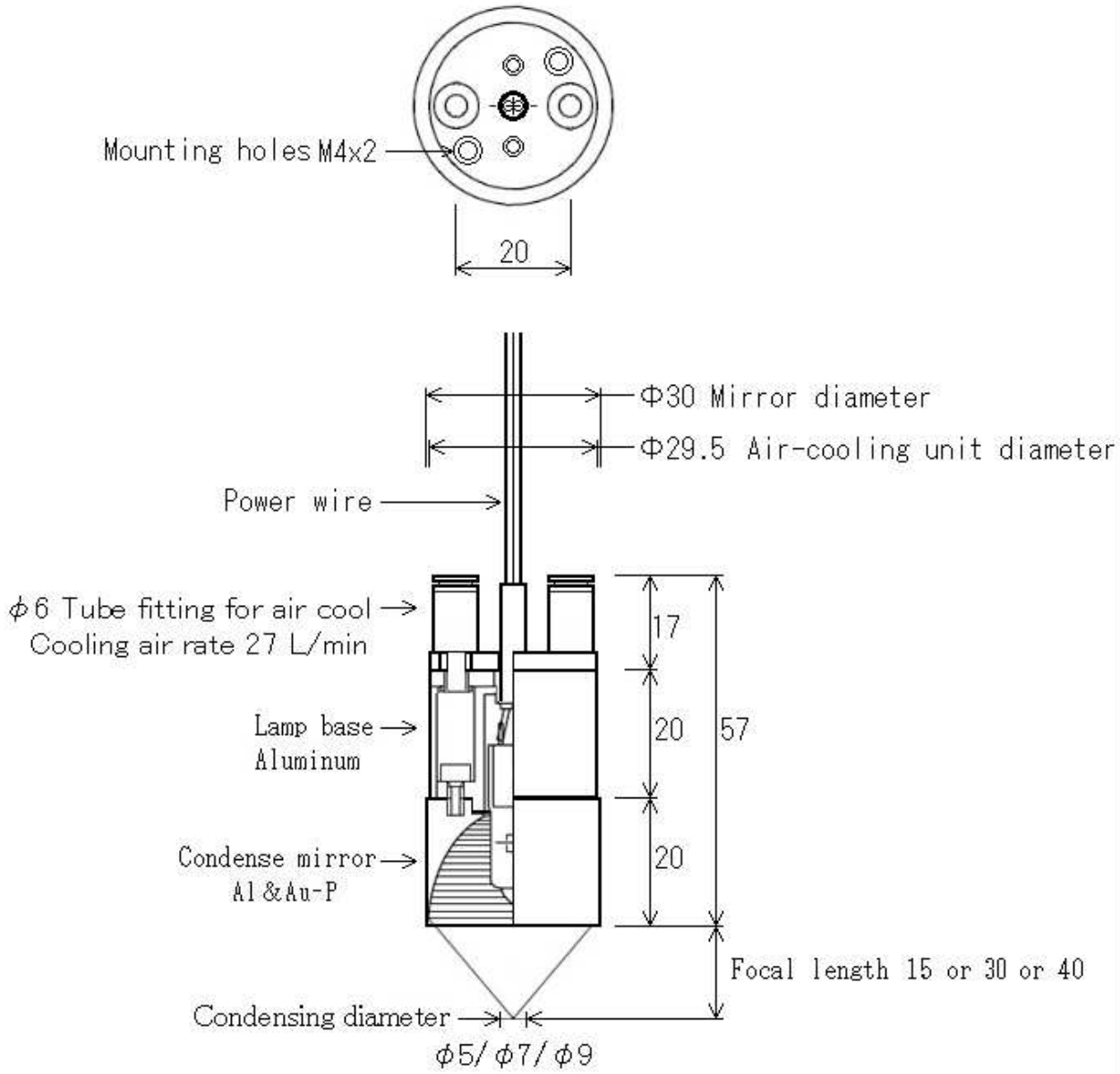


Cooling air rate 10 L/min

D/#	ACU-08
Model	Halogen Point Heater Φ 8 Pressure Air Cooling Unit

Date	2018/5/1	Design	Y.Shimoda

Heat-tech



【How to order】

f□ Specify focal length

□v-□w Specify Voltage - Power

P□ Specify Power line length

/Hood-30f□ Antiglare hood

※ Focus diameter not be specified.

Mirror	Φ30mm		
Focus	15mm	30mm	40mm
Focus Point	Φ5mm	Φ7mm	Φ9mm
Volt-Power	ACDC 24v-75w /12v-110w		
D/#	HPH-30CA/f□/□v-□w/P□m		
Model	Compressed air cooling type Halogen Point Heater		

Date	2018/5/1	Design	Y.Shimoda

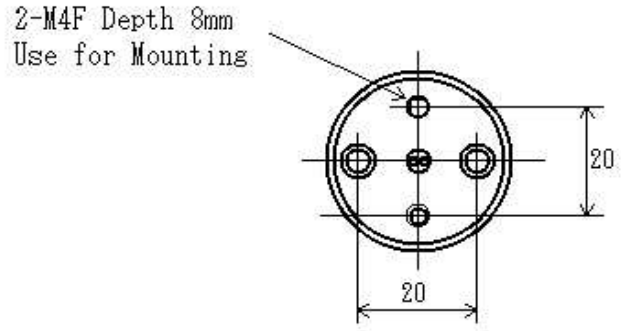
Heat-tech

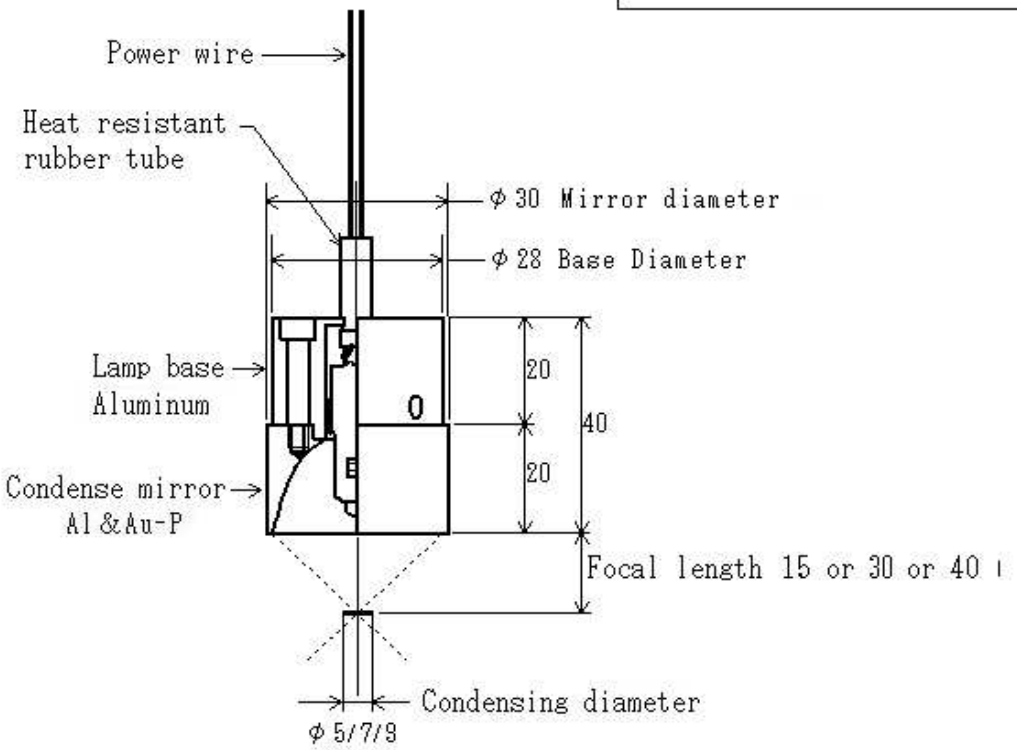
Composes of the mirror and the lamp.

Lamp is fixed to the lamp base with an inorganic adhesive.
Wires are coated with silicone rubber and glass cloth.

The temperature of the body becomes 230℃ when continuously heating by the voltage rating.

The heatproof temperature is 180℃.
1.Compulsion cooling
2.Voltage regulation
3.Control at lighting time
Either the above-mentioned is necessary.



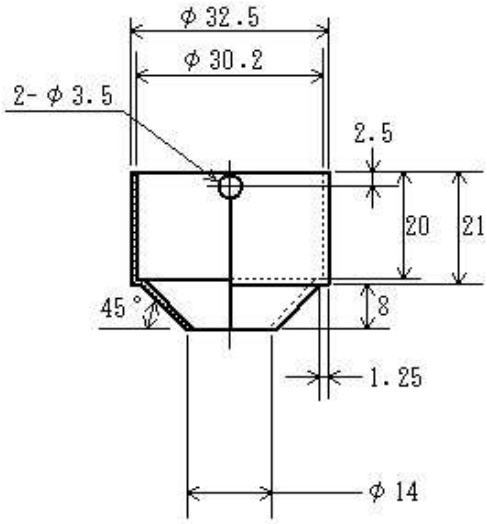


【How to order】
f□ Specify focal length
□v-□w Specify Voltage - Power
P□ Specify Power line length
/WCU-30 Water Cooling Unit
/Hood-30f□ Antiglare hood
※ Focus diameter not be specified.

Mirror	Φ30mm		
Focus	15mm	30mm	40mm
Focus Point	Φ5mm	Φ7mm	Φ9mm
Volt-Power	ACDC 24v-75w /12v-110w		
D/#	HPH-30/f□/□v-□w/P□m		
Model	Water cooling unit exterior type Halogen Point Heater		

Date	2018/5/1	Design	Y.Shimoda

Heat-tech



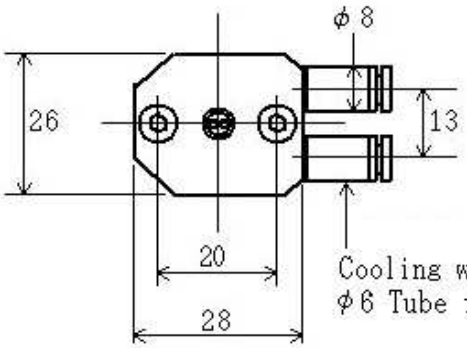
【How to order】
f□ Specify focal length

Material	SUS303-304
D/#	Hood-30f□
Model	Halogen Point Heater Antiglare hood for HPH-30

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

Water Cooling Unit WCU-30



Cooling water inlet and outlet
φ6 Tube fitting

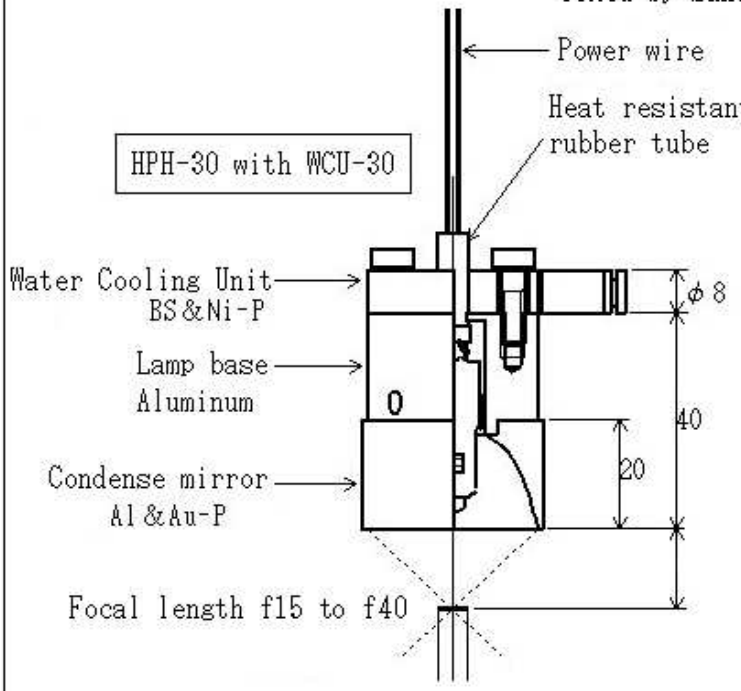
For HPH-30/35 Shared

It can be safely used by equipping with this water-cooled unit.

Please flow cool water by Φ6 tube.

HPH-30, please fix it fastened together with screws M4 for water-cooled unit. Or disconnected, fixed by sandwiching the lamp base unit.

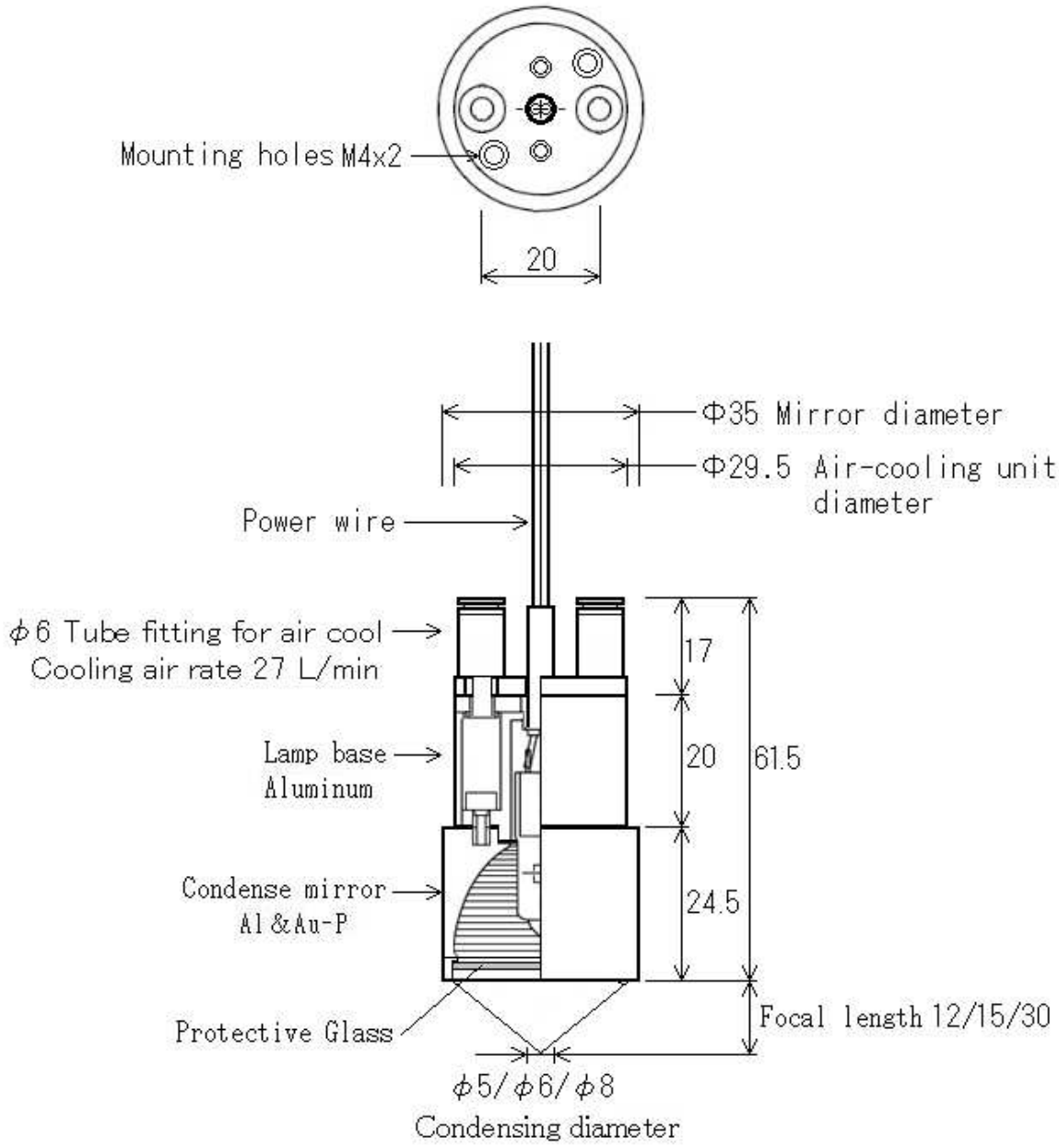
HPH-30 with WCU-30



Flow rate	50cc/min
D/#	WCU-30
Model	Halogen Point Heater Water Cooling Unit for HPH-30&35

Date	2018/5/1	Design	Y.Shimoda

Heat-tech



【How to order】

f□ Specify focal length

□v-□w Specify Voltage - Power

P□ Specify Power line length

/HRG Heat-resistant glass

/QG Quartz glass

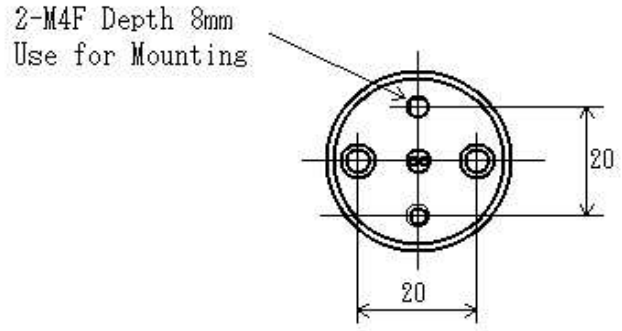
/Hood-35f□ Antiglare hood

※ Focus diameter not be specified.

Mirror	Φ35mm		
Focus	12mm	15mm	30mm
Focus Point	Φ5mm	Φ6mm	Φ8mm
Volt-Power	ACDC 24v-75w /12v-110w		
D/#	HPH-35CA/f□/□v-□w/P□m		
Model	Compressed air cooling type Halogen Point Heater		

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

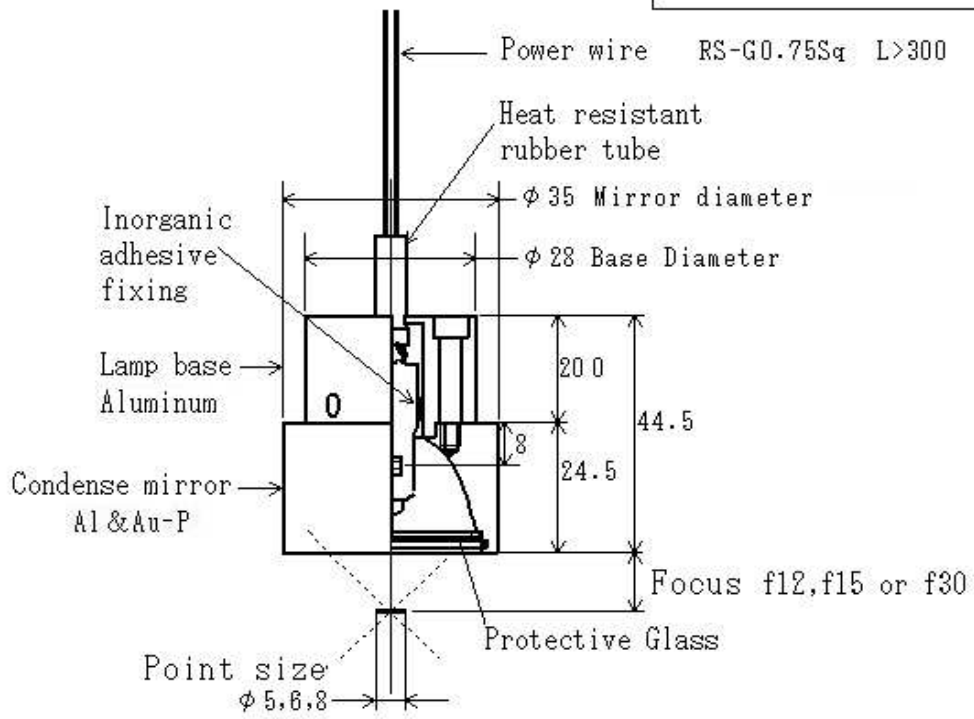


Composes of the mirror and the lamp.

Lamp is fixed to the lamp base with an inorganic adhesive.
Wires are coated with silicone rubber and glass cloth.

The temperature of the body becomes 230℃ when continuously heating by the voltage rating.

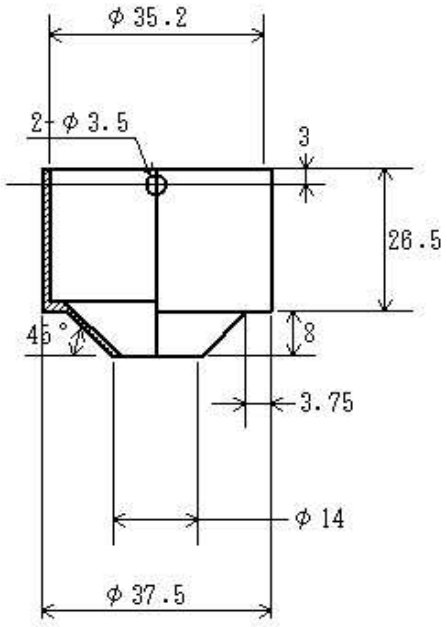
The heatproof temperature is 180℃.
1.Compulsion cooling
2.Voltage regulation
3.Control at lighting time
Either the above-mentioned is necessary.



【How to order】
f□ Specify focal length
□v-□w Specify Voltage - Power
P□ Specify Power line length
/HRG Heat-resistant glass
/QG Quartz glass
/WCU-30 Water Cooling Unit
/Hood-35f□ Antiglare hood
※ Focus diameter not be specified.

Mirror	Φ35mm		
Focus	12mm	15mm	30mm
Focus Point	Φ5mm	Φ6mm	Φ8mm
Volt-Power	ACDC 24v-75w /12v-110w		
D/#	HPH-35/f□/□v-□w/P□m		
Model	Water cooling unit exterior type Halogen Point Heater		

Date	2018/5/1	Design	Y.Shimoda		Heat-tech

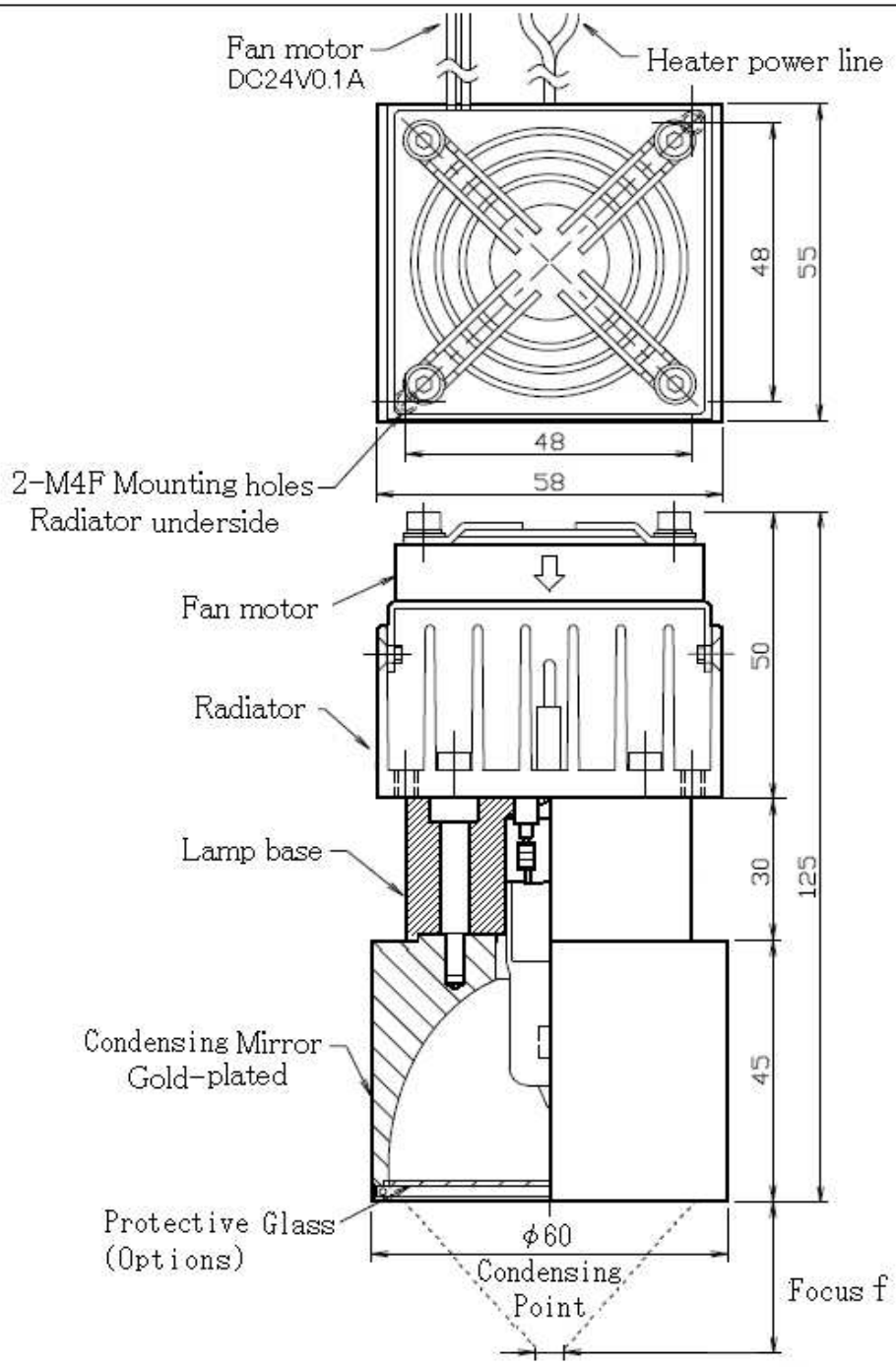


【How to order】
f□ Specify focal length

Material	SUS303-304
D/#	Hood-35f□
Model	Halogen Point Heater Antiglare hood for HPH-35

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

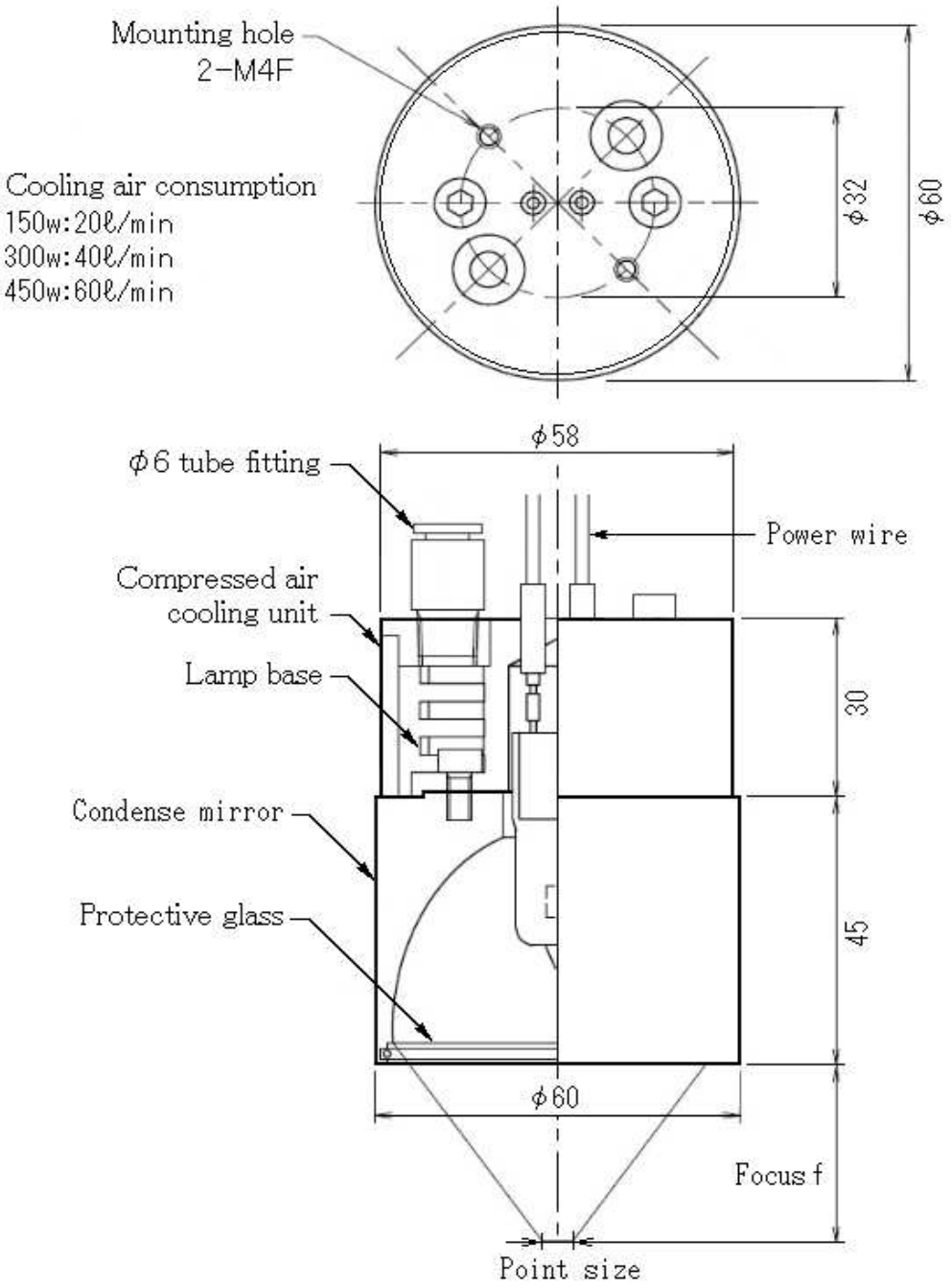


【 How to order 】
f□ Specify focal length
□v-□w Specify Voltage - Power
P□ Specify Power line length
/HRG Heat-resistant glass
/QG Quartz glass
/Hood-60f□ Antiglare hood
※ Focus diameter not be specified.

Focus (mm)	15	30	60	105	∞
150w Point	≒Φ3	≒Φ4	≒Φ7	≒Φ10	≒Φ58
300w Point	≒Φ6	≒Φ7	≒Φ11	≒Φ18	≒Φ58
450w Point	≒Φ7	≒Φ8	≒Φ14	≒Φ21	≒Φ58
Volt - Power Life	AC/DC 24v-150w-500h AC/DC 24v-300w-800h AC/DC 36v-450w-150h				
D/#	HPH-60FA/f□/□v-□w/P□m				
Model	Fan air cooling type Halogen Point Heater				

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

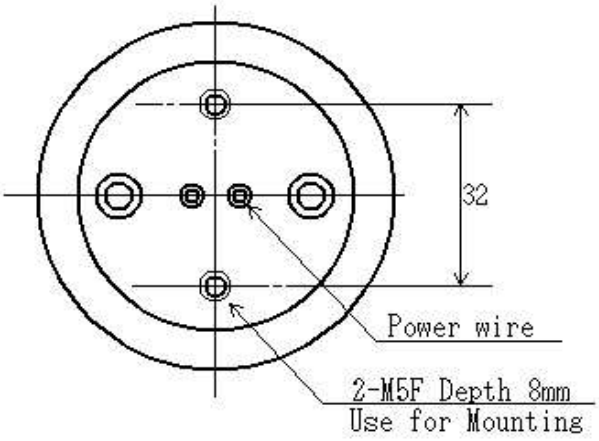


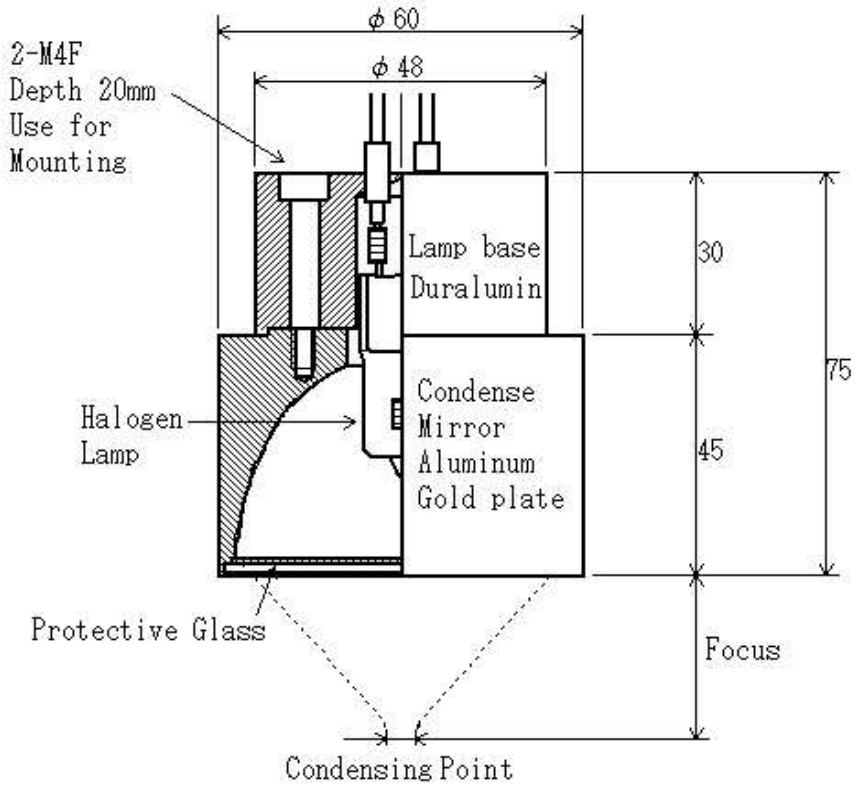
【 How to order 】
f□ Specify focal length
□v-□w Specify Voltage - Power
P□ Specify Power line length
/HRG Heat-resistant glass
/QG Quartz glass
/Hood-60f□ Antiglare hood
※ Focus diameter not be specified.

Focus (mm)	15	30	60	105	∞
150w Point	≒Φ3	≒Φ4	≒Φ7	≒Φ10	≒Φ58
300w Point	≒Φ6	≒Φ7	≒Φ11	≒Φ18	≒Φ58
450w Point	≒Φ7	≒Φ8	≒Φ14	≒Φ21	≒Φ58
Volt - Power Life	AC/DC 24v-150w-500h AC/DC 24v-300w-800h AC/DC 36v-450w-150h				
D/#	HPH-60CA/f□/□v-□w/P□m				
Model	Compressed air cooling type Halogen Point Heater				

Date	2018/5/1	Design	Y.Shimoda

Heat-tech



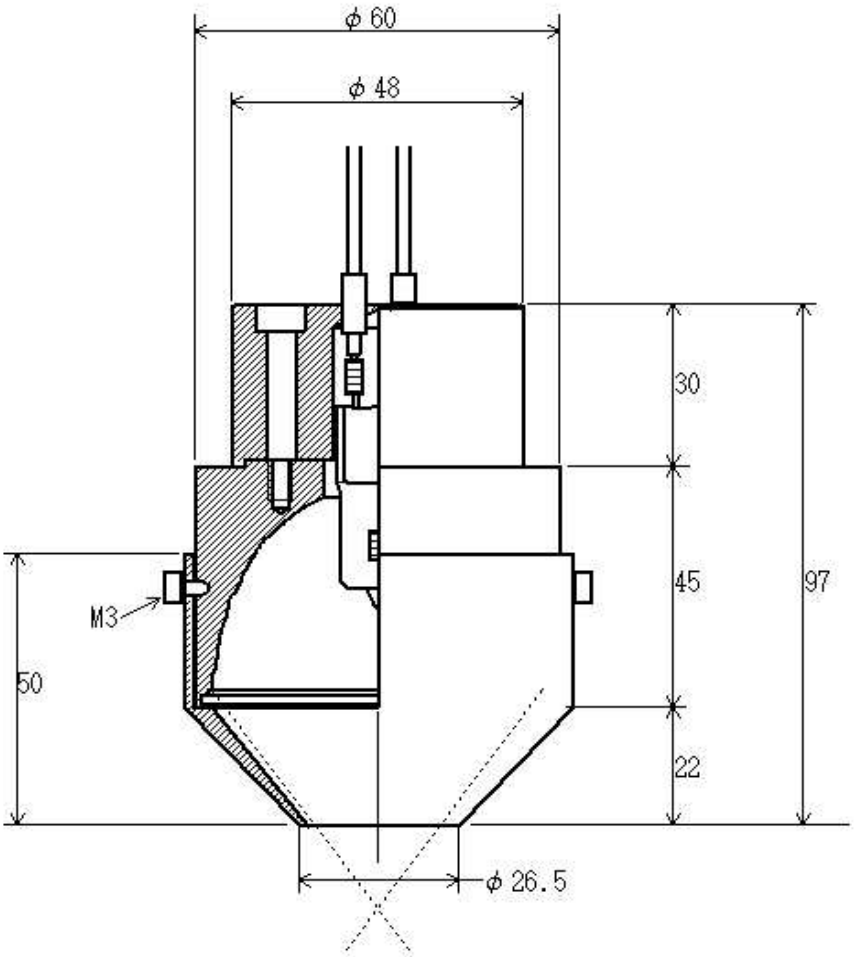


【 How to order 】
f□ Specify focal length
□v-□w Specify Voltage - Power
P□ Specify Power line length
/HRG Heat-resistant glass
/QG Quartz glass
/WCU-60 Water Cooling Unit
/Hood-60f□ Antiglare hood
※ Focus diameter not be specified.

Focus (mm)	15	30	60	105	∞
150w Point	≒Φ3	≒Φ4	≒Φ7	≒Φ10	≒Φ58
300w Point	≒Φ6	≒Φ7	≒Φ11	≒Φ18	≒Φ58
450w Point	≒Φ7	≒Φ8	≒Φ14	≒Φ21	≒Φ58
Volt - Power Life	AC/DC 24v-150w-500h AC/DC 24v-300w-800h AC/DC 36v-450w-150h				
D/#	HPH-60/f□/□v-□w/P□m				
Model	Water cooling unit exterior type Halogen Point Heater				

Date	2018/5/1	Design	Y.Shimoda

Heat-tech



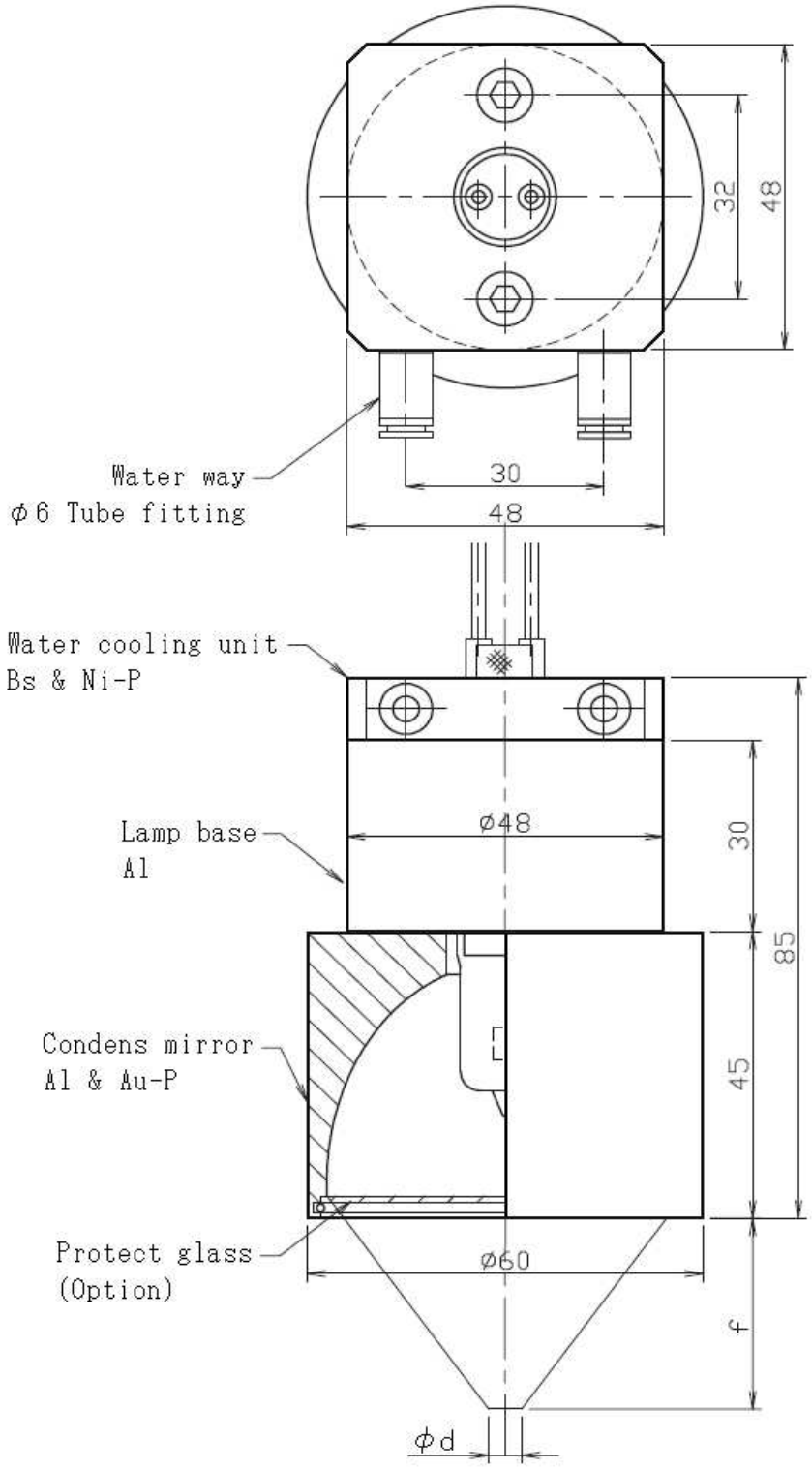
【 How to order 】

f□ Specify focal length

Material	SUS303-304
D/#	Hood-60f□
Model	Halogen Point Heater Antiglare hood for HPH-60

Date	2018/5/1	Design	Y.Shimoda

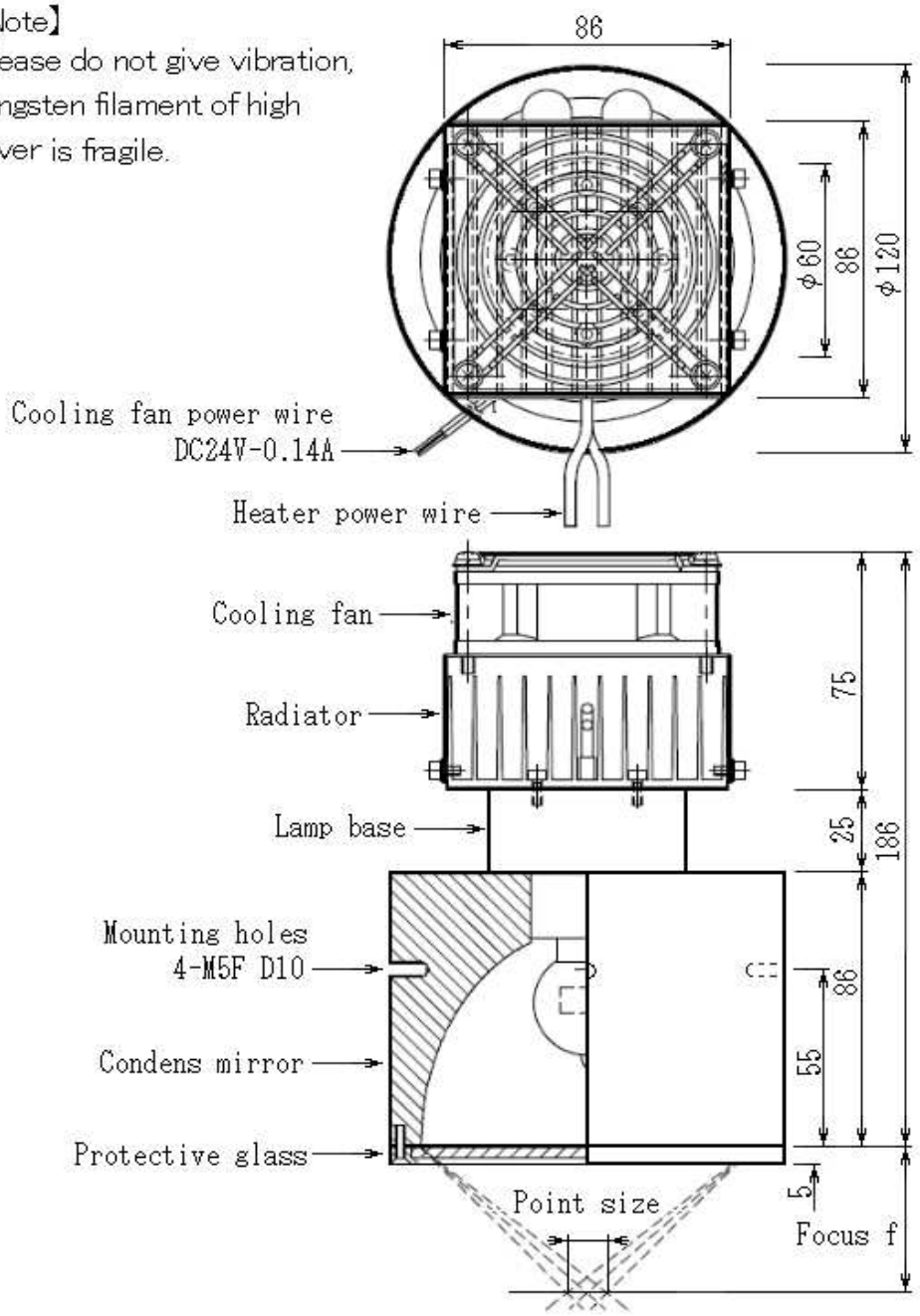
Heat-tech



Flow rate	250cc/min
D/#	WCU-60
Model	Halogen Point Heater Water Cooling Unit for HPH-60

Date	2018/5/1	Design	Y.Shimoda	Heat-tech

【Note】
Please do not give vibration, tungsten filament of high fever is fragile.



【How to order】
f□ Specify focal length
□v-□w Specify Voltage - Power
P□ Specify Power line length
/HRG Heat-resistant glass
/QG Quartz glass
/QG Quartz glass

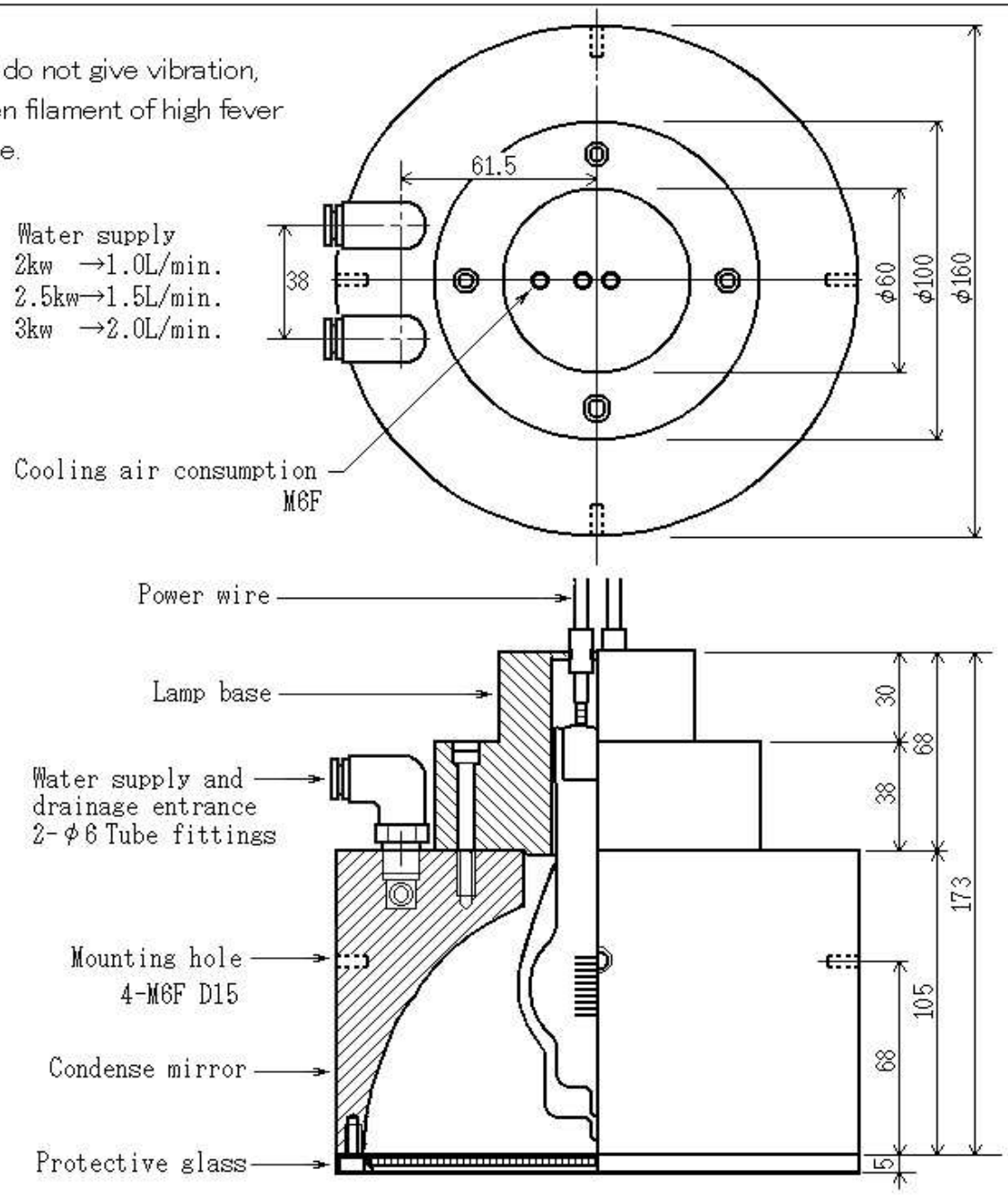
※ Designation of the focus diameter will be custom-made correspondence.

Focus (mm)	45	100	260
Point size	≒Φ18	≒Φ32	≒Φ65
Voltage Power Life	AC100v-500w-800h / AC100V-1kw-800h AC200v-1kw-800h		
D/#	HPH-120FA/f□/□v-□w/P□m		
Model	Fan air cooling type Halogen Point Heater		

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

【Note】
Please do not give vibration,
tungsten filament of high fever
is fragile.



【 How to order 】
f□ Specify focal length
□v-□w Specify Voltage - Power
P□ Specify Power line length
/HRG Heat-resistant glass
/QG Quartz glass

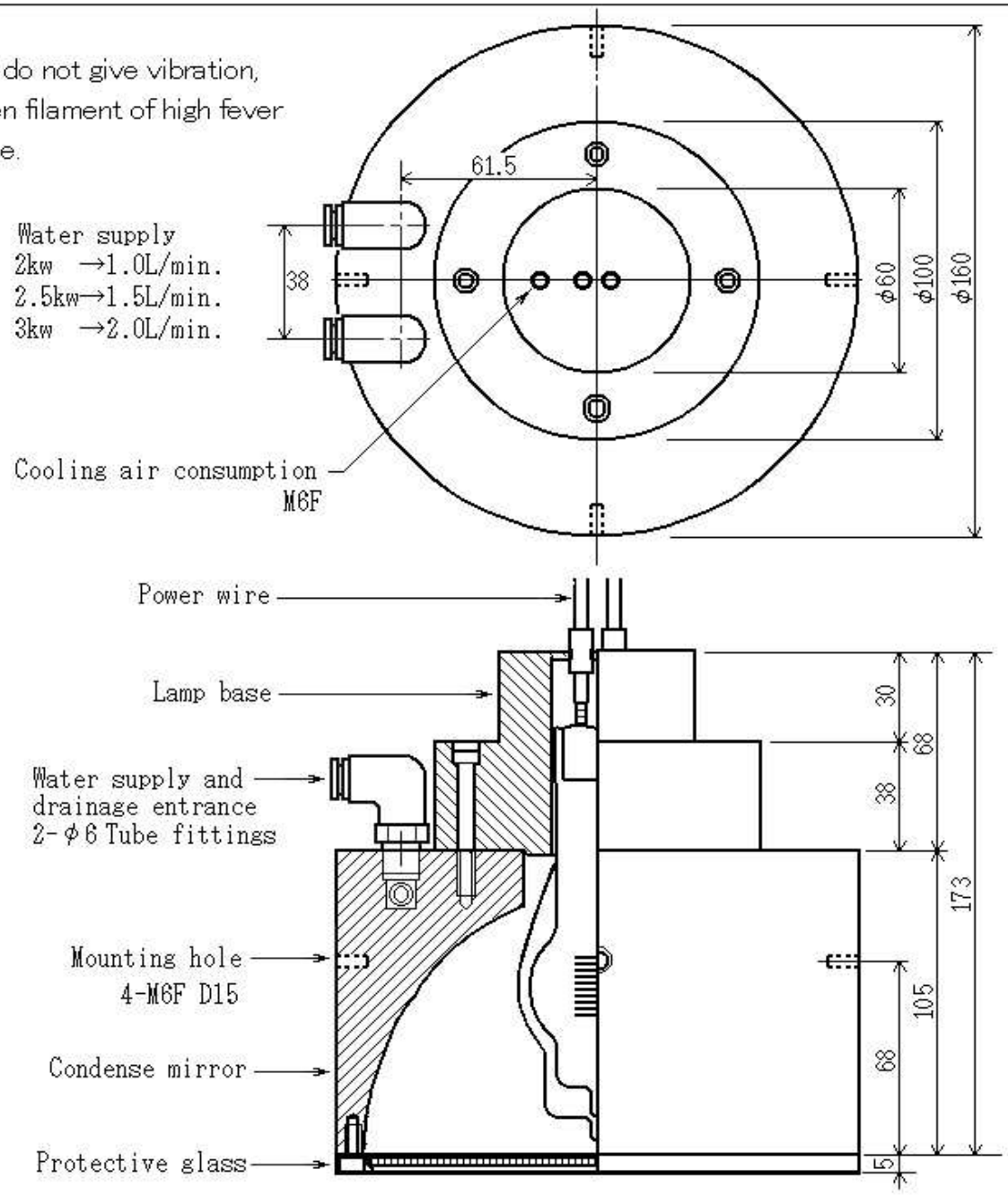
※ Designation of the focus diameter will be custom-made correspondence.

Focus (mm)	40	80	160	320	1000
2kw Point	≒Φ24	≒Φ30	≒Φ54	≒Φ105	≒Φ200
2.5kw Point	≒Φ30	≒Φ38	≒Φ68	≒Φ132	≒Φ250
3kw Point	≒Φ36	≒Φ45	≒Φ81	≒Φ156	≒Φ300
Voltage Power Life	AC100v-2kw-200h / AC100V-2.5kw-200h AC120v-3kw-200h				
D/#	HPH-160W/f□/□v-□w/P□m				
Model	Water cooling built-in type Halogen Point Heater				

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

【Note】
Please do not give vibration,
tungsten filament of high fever
is fragile.



【 How to order 】
f□ Specify focal length
□v-□w Specify Voltage - Power
P□ Specify Power line length
/HRG Heat-resistant glass
/QG Quartz glass

※ Designation of the focus diameter will be custom-made correspondence.

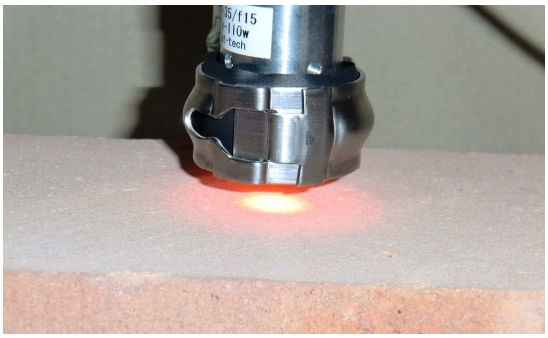
Focus (mm)	40	80	160	320	1000
2kw Point	≒Φ24	≒Φ30	≒Φ54	≒Φ105	≒Φ200
2.5kw Point	≒Φ30	≒Φ38	≒Φ68	≒Φ132	≒Φ250
3kw Point	≒Φ36	≒Φ45	≒Φ81	≒Φ156	≒Φ300
Voltage Power Life	AC100v-2kw-200h / AC100V-2.5kw-200h AC120v-3kw-200h				
D/#	HPH-160W/f□/□v-□w/P□m				
Model	Water cooling built-in type Halogen Point Heater				

Date	2018/5/1	Design	Y.Shimoda

Heat-tech

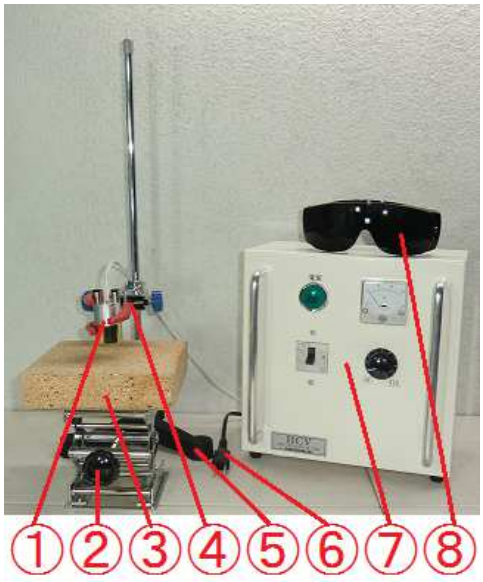
Halogen Point Heater Laboratory-kit HPH-35CA/f15-110w +HCV

Focal size Φ6 Easily heating high temperatures!



◆ Feature ◆

1). Easily heating high temperatures by the kit !
2). Easily heating high temperatures at focal size Φ6 !
3). Easily adjusting the radiation diameter (focal size) by manual lift!
4). Easily changing the heat power (wattage) by slide transformer !
5). Easily cooling by compressed air!



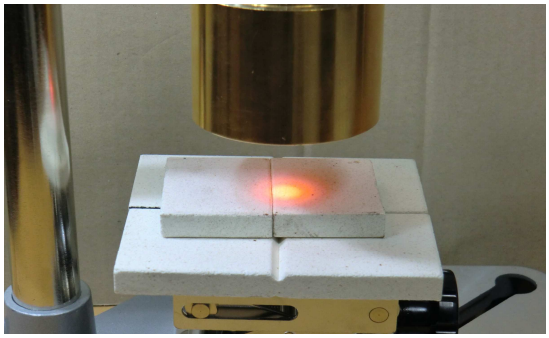
(Example of lab kit assembly.)
(※The lab kit is delivered as individual components.)

① Air cool type small Halogen Point Heater HPH-35CA/f15/12v-110w/GW
Heating the subject with 110w.
② Manual lift.
Up and down 80 mm by 16 rotating knobs, the accuracy is 0.5 mm.
② Manual lift. Platform surface is 100mm x 100mm,
③ Square Australia Brick. It is useful when place the test piece.
④ Heater mounting bracket
⑤ Test stand
⑥ Power cable for heater controller
⑦ Manual variable power supply HCV-AC200-240V/-DC12V-300W
Input voltage in the range of AC200V-AC240V.
The output adjustable range DC0v ～ 12v.
Easily changing the heat power (wattage) by slide transformer.
⑧ Safety glasses against high intensity light
It can visually check the high-intensity irradiation point at maximum output.

※ In addition to the above, compressed air for cooling is required for use.

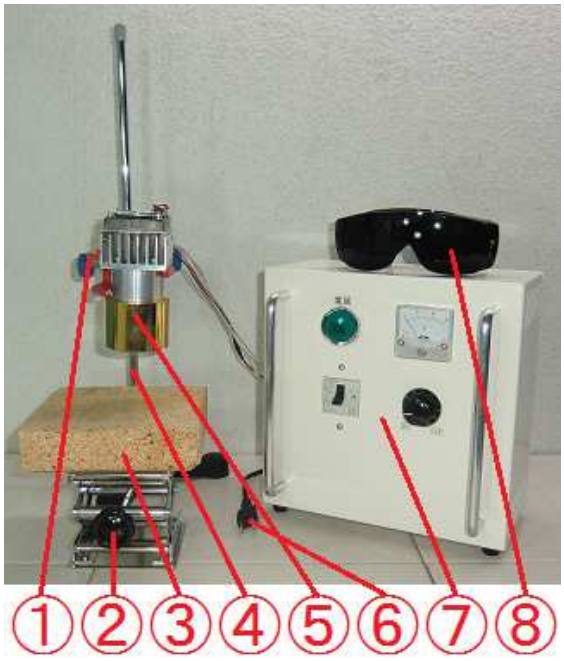
Halogen Point Heater Laboratory-kit HPH-60FA/f30-450w +HCVD

Max.Temp.1400℃ Easily heating high temperatures!



◆ Feature ◆

1). Easily heating high temperatures by the kit !
2). Easily heating 1400℃ case by max.temperature.
3). Easily adjusting the radiation diameter (focal size) by manual lift!
4). Easily changing the heat power (wattage) by slide transformer !
5). Easily cooling by cooling fan!

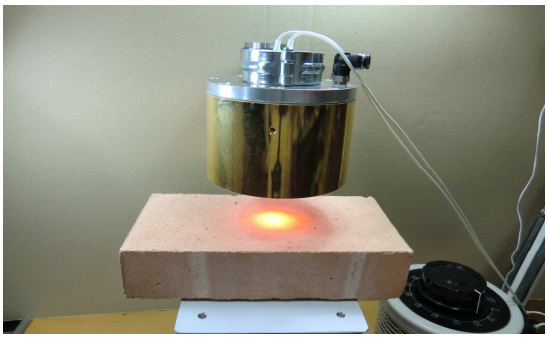


(Example of lab kit assembly.)
(※The lab kit is delivered as individual components.)

① Heater mounting bracket
② Manual lift.
Up and down 80 mm by 16 rotating knobs, the accuracy is 0.5 mm.
Manual lift. Platform surface is 100mm x 100mm,
③ Square Australia Brick. It is useful when place the test piece.
④ Test stand Pole & Base
⑤ Fan air cooling type Halogen Point Heater HPH-60FA/f30/36v-450w/GW
High power of 450w is condensed into Φ 6, heating the object.
⑥ Power cable for heater controller
⑦ Manual variable power supply HCVD-AC100-240V/DC36V-600W
Input voltage in the range of AC100V-AC240V.
The output adjustable range DC0v ～ 36v.
Equipped with DC24V power for air cooling fan.
⑧ Safety glasses against high intensity light
It can visually check the high-intensity irradiation point at maximum output.

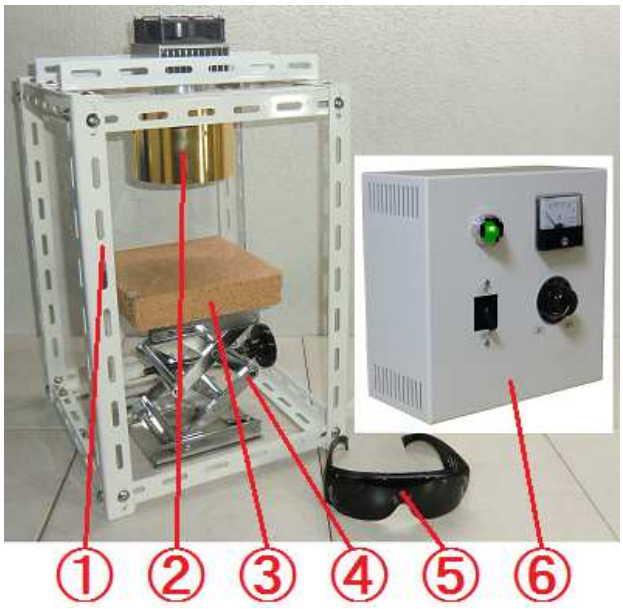
Halogen Point Heater Laboratory-kit　HPH-120FA/f45-1000w

The power of 1000w is condensed to Φ21.



◆ Feature ◆

1). Easily heating high temperatures by the kit !
2). Easily heating 1300℃ case by max.temperature.
3). Easily adjusting the radiation diameter (focal size) by manual lift!
4). Easily changing the heat power (wattage) by slide transformer !



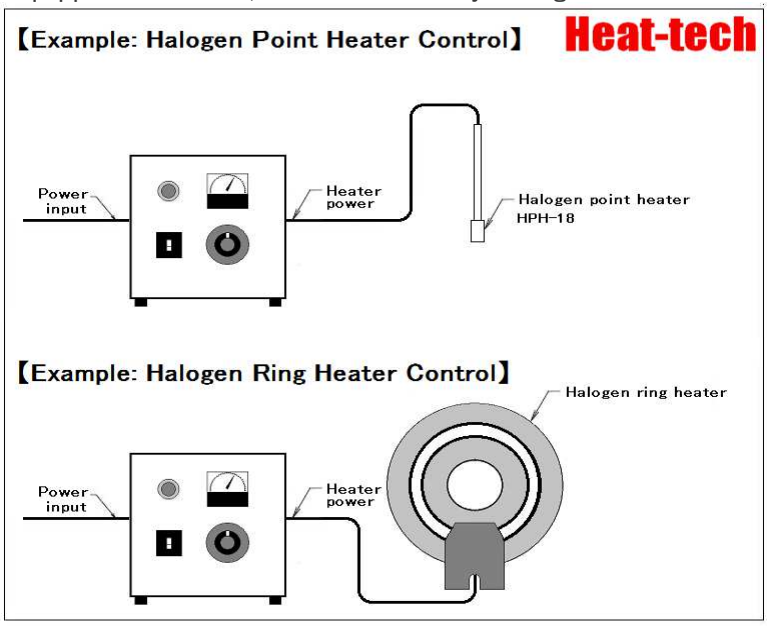
(Example of lab kit assembly.)
(※The lab kit is delivered as individual components.)

① Test Stand
② Halogen Point Heater HPH-120FA/f45/200v-1000w/GW
High power of 1000w is condensed into Φ 21, heating the object.
③ Refractory bricks
This is useful when you put the sample.
④ Manual lift. Up and down 80 mm by 16 rotating knobs, the accuracy is 0.5 mm.
Platform surface is 100mm x 100mm,
54mm the initial height, 134mm maximum height, 80mm height adjustable.
⑤ Safety glasses against high intensity light
It can visually check the high-intensity irradiation point at maximum output.
⑥ Manual variable power supply HCVD-AC200-240V/-AC200V-4KW
By varying the AC200-240v to AC0 - 200v in volume,
user can adjust the heating output.
(When input power 240v varying 0-240v)
Equipped with DC24V power for air cooling fan.

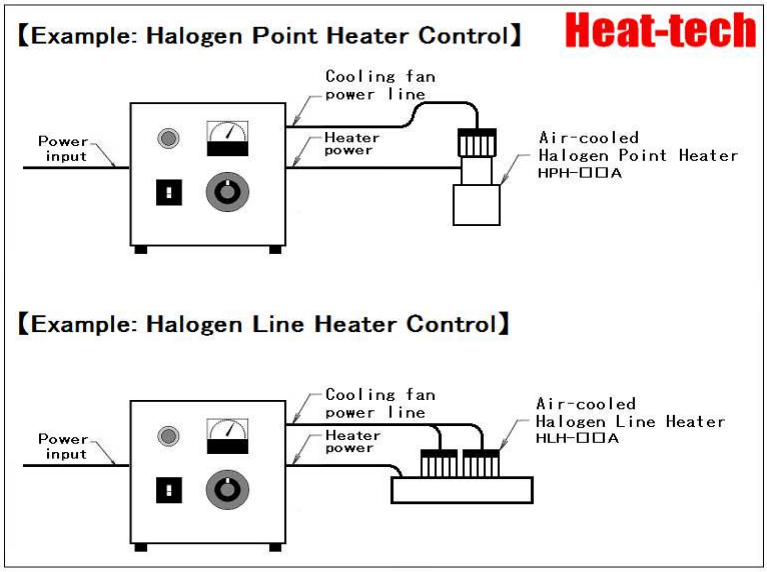
Manual Halogen Heater Controller HCV series

Color universal design type HCV-CUD / HCVD-CUD
A blue indicator light is used to create a color scheme that is easy for anyone to see.
Please specify additional CUD to the model of your order.

Standard type HCV
Equipped with a dial, user can manually voltage control of the halogen heater.



DC power supply built-in for air cooling type HCVD
Equipped with a dial and DC power supply for the air cooling fan, user can manually voltage control of the air-cooled halogen heater.



D/#	Power supply	Output Voltage-Current	Power supply for cooling fan
HCV-AC100-240V/DC6V-25A	AC100～240V	DC6V-25A	With-out
HCV-AC100-240V/DC12V-25A	AC100～240V	DC12V-25A	With-out
HCV-AC100-240V/DC24V-12.5A	AC100～240V	DC24V-12.5A	With-out
HCV-AC100-240V/DC36V-12.5A	AC100～240V	DC36V-12.5A	With-out
HCV-AC100-240V-25A	AC100～240V	AC100～240V-25A	With-out
HCV-AC100-240V-50A	AC100～240V	AC100～240V-50A	With-out
HCV-AC100-240V-75A	AC100～240V	AC100～240V-75A	With-out
HCV-AC220V/AC100V-25A	AC220V	AC100V-25A	With-out
HCV-AC220V/AC120V-25A	AC220V	AC120V-25A	With-out
HCVD-AC100-240V/DC12V-25A	AC100～240V	DC12V-25A	DC24V-0.5A
HCVD-AC100-240V/DC24V-12.5A	AC100～240V	DC24V-12.5A	DC24V-0.5A
HCVD-AC100-240V/DC36V-12.5A	AC100～240V	DC36V-12.5A	DC24V-0.5A
HCVD-AC100-240V-25A	AC100～240V	AC100～240V-25A	DC24V-0.5A
HCVD-AC100-240V-50A	AC100～240V	AC100～240V-50A	DC24V-0.5A
HCVD-AC100-240V-75A	AC100～240V	AC100～240V-75A	DC24V-0.5A

Additional Specifications

CUD	Color universal design type blue light.
FPR	Front Protection Rail
RPR	Rear Protection Rail
LH	Lifting Handle
Power Cable	Manufacture the specification of the power cable.

D/#	Heater compatible models		
	Point Heater	Line Heater	Ring Heater
HCV-AC100-240V/DC6V-25A	FPH-30		
HCV-AC100-240V/DC12V-25A	HPH-12・18・30・35　FPH-60		
HCV-AC100-240V/DC24V-12.5A	HPH-30・35・60		
HCV-AC100-240V/DC36V-12.5A	HPH-60		
HCV-AC100-240V-25A	HPH-120W・160W	HLH-30W・35W・40W・50W・55W・60W・65W	HRH-C98
HCV-AC100-240V-50A			
HCV-AC100-240V-75A			
HCV-AC220V/AC100V-25A	HPH-120W・160W		
HCV-AC220V/AC120V-25A	HPH-160W		
HCVD-AC100-240V/DC12V-25A	HPH-60A		
HCVD-AC100-240V/DC24V-12.5A	HPH-60A		
HCVD-AC100-240V/DC36V-12.5A	HPH-60A		
HCVD-AC100-240V-25A	HPH-120A	HLH-30A・35A・55A・60A・65A	
HCVD-AC100-240V-50A			
HCVD-AC100-240V-75A			

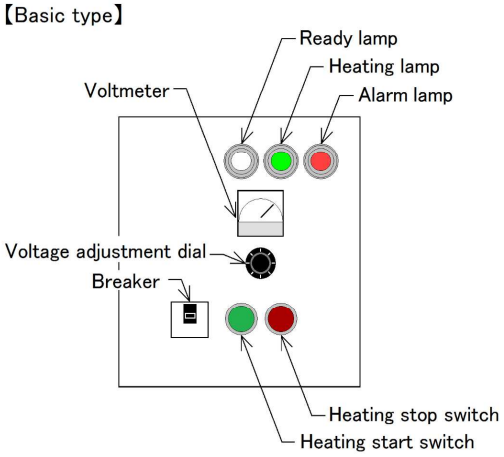
【 Options　Front Protection Rail・Rear Protection Rail・Lifting Handle 】

High-performance Heater Controller HHC2 series

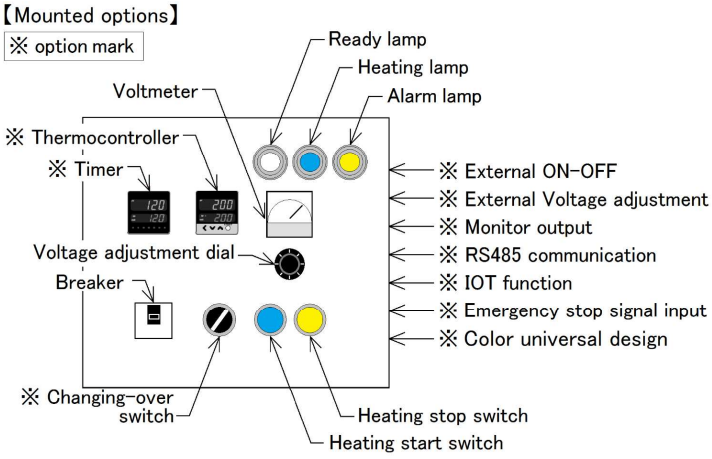
【Feature】
HHC 2 is a heater controller that combines options with basic functions and is customized for use.

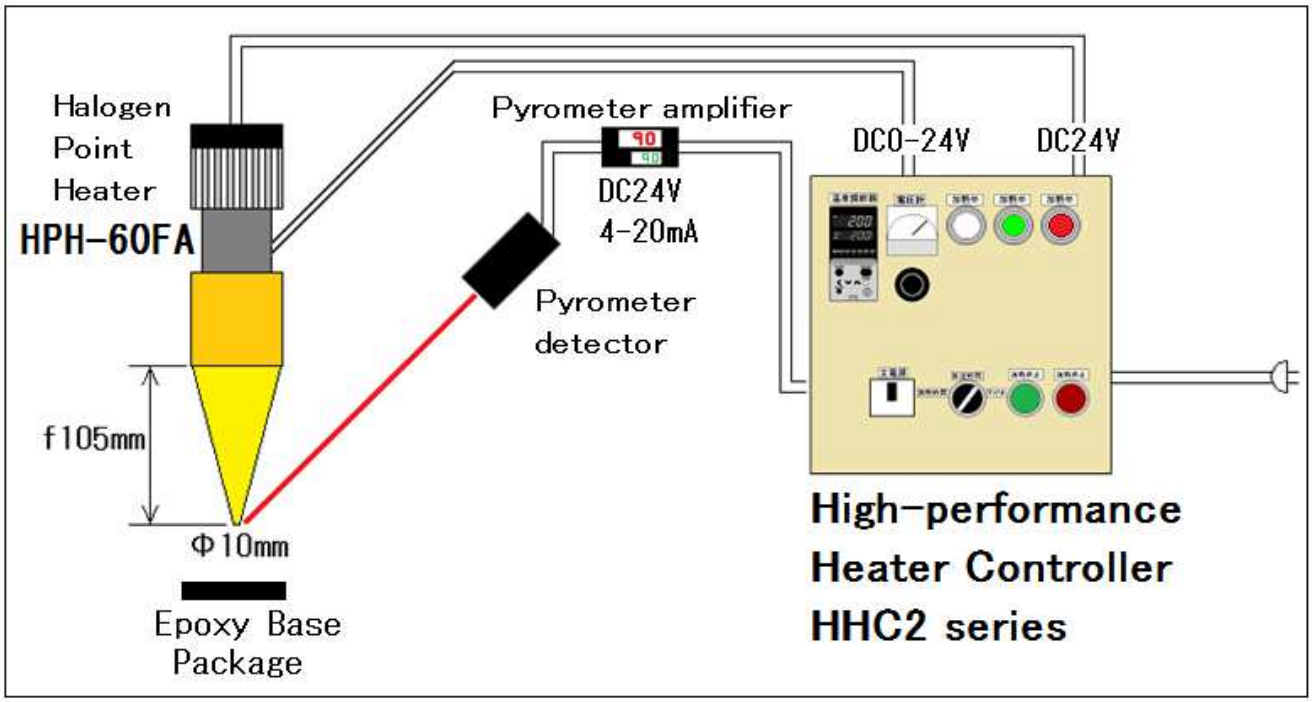
- Color universal design type can be specified CUD as an option.
  White, blue and yellow indicator lights, Blue and Yellow operation buttons.
  The color scheme is easy for anyone to see.
- “HHC2” has the ability to manually control the ON-OFF of the power, voltage.
  Current limit, slow-up, over-current breaker of voltage and so on,
  It incorporates enough safety equipment necessary to the halogen heater.
- Thermocontroller on-board of the option selected, there is a thermocouple specification or a radiation thermometer specification.
- In option selected, user can control of ON-OFF and the voltage is possible with the outside signal.
- The IOT-function of the option selected, user can confirm data such as, the set temperature, heating temperature, operation time, operation number of times, heater exchange number of times.
- Using a duplication sensor of the optional selected, a over temperature alarm management is possible.
- Using a one-shot timer of the optional selected, an precision heating examination is possible.

【Basic type】



【Mounted options】





D/#	Supply voltage	Heater voltage	Control current
HHC2-12v-300w	AC100-240v	DC12v	25A
HHC2-24v-330w	AC100-240v	DC24v	13A
HHC2-36v-600w	AC100-240v	DC36v	15A
HHC2-36v-1kw	AC100-240v	DC36v	28A
HHC2-120V-3kw	AC200-240v	AC120v	25A
HHC2-100v-240v-1	AC100-240v	AC100-240v	15A
HHC2-100v-240v-3	AC100-240v	AC100-240v	30A
HHC2-100v-240v-6	AC100-240v	AC100-240v	60A

【Standard Function】

Power-supply voltage	AC100V～240V 50/60Hz
DC Control current	12v-300w / 24v-300w / 36v-500w / 36v-1kw
AC Control current	15A / 30A / 60A
Analog voltmeter	The output voltage of Halogen Heater is indicated by the analog meter.
Manual ON-OFF	Output ON-OFF by switch of the panel.
Manual adjustment	Adjustable voltage from 0 to 98% by 4-20mA signal from Remote.
AC power soft-start	At startup, the inrush current is controlled by increasing the voltage slowly.
Overcurrent protect	The power semiconductor device is protected from the excessive current.
Burnout detect	With heater burnout detection and display. AC output type limited installed.
Usage environment	Temperature 0 ～ 45 ℃ Humidity 10% to 95% (non-condensing)
External dimensions	Width 300 x height 300 x depth 300 mm

【Options】

Abbreviation	Contents
CUD	Color universal design type white-blue-yellow indicator light and operation switch.
TC	Thermo controller : Thermo couple input
TP	Thermo controller : Pyrometer input
PM	The Pyrometer and mounted surface.
SV	Supervisor function for Over-heat protect or Target-heating
HL	High-Low Control for rapid-heating or preheating
TMR1	Mounting surface.-For one-shot heating
TMR2	Mounting surface.-For thermal holding time
TMR3	Mounting surface.-Heating time for the predictive maintenance
RC1	Heating start or stop in the signal from outside
RC2	Specified output voltage in 4-20mA from outside
RSP	Specified thermocontroller temp. in 4-20mA
MON	Output in 4-20mA present temp. to the outside
RS485	RS-485 Communication
IOT	IOT function
AirV	Air opening and closing valve
OFDT	Air closing valve, heating stop after the cooling timer 5 minutes
WP	Cooling water pressure shortage alarm
AP	Air Blow Heater and terminal cooling air pressure shortage alarm
DC24	DC24V power supply cooling fan
CFS	Cooling fan stop detection signal processing
FPR	Front Protection Rail
RPR	Rear Protection Rail
Pyrometer	Pyrometer to choice of applications, and then fitted adjusted to the heater controller.
Power Cable	Manufacture the specification of the power cable.

※ If user need a function other than the above, please contact us.
[Note] When the to add a function, there is that the external dimensions changes.

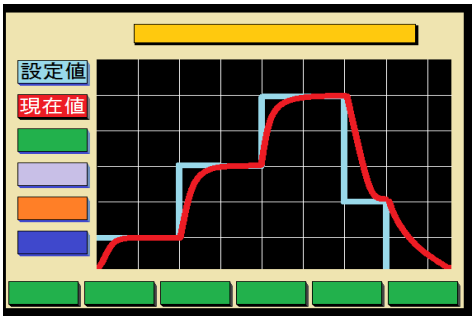
【 Options Front Protection Rail 】

【 Options Rear Protection Rail 】

Condition setting, confirmation and recording,
the heater controller of 3 function 1 equipment.

Stepset Controller

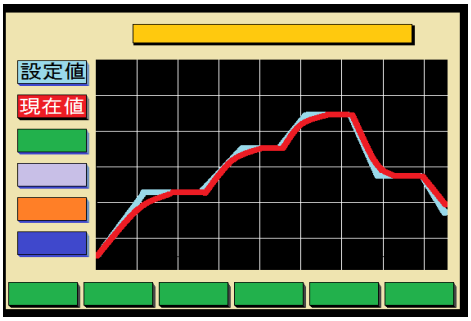
Profile-maker SSC series



◆Multistage setting function

A processing method such as a decline of the surface tension by the heating and extinction of the residual stress can be considered.

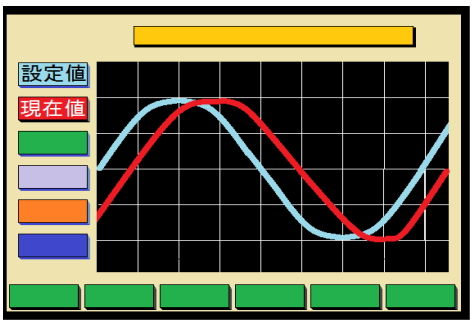
Setting the reservoir of intermediate polymerization reaction
Repeated heating and cooling method
Maintenance of solution processing temperature
Two-stage preheating quenching processing
Gas nitriding processing
Gas two-stage nitriding processing
Salt bath soft nitriding processing
Gas soft nitriding processing



◆Gradient setting function

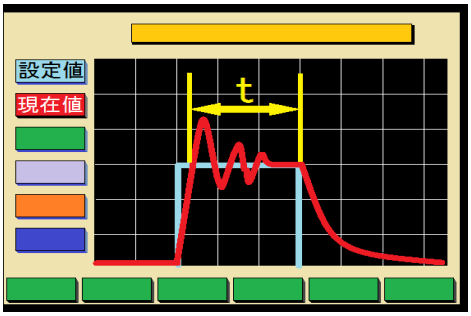
Important expansion and shrinkage rate, it is test for a precision material .

Trapezoidal control
Isothermal annealing
Management of recrystallization temperature
Slow heat → annealing → slow cooling process
Two-stage annealing
Age hardening treatment



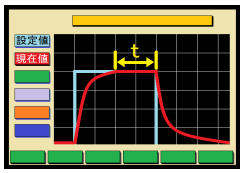
◆Sine curve setting function

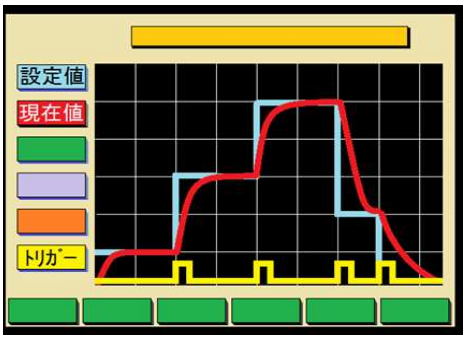
Heat cycle test of an electronic device.
Aging accelerated test of an electronic device.



◆One-Shot heating function

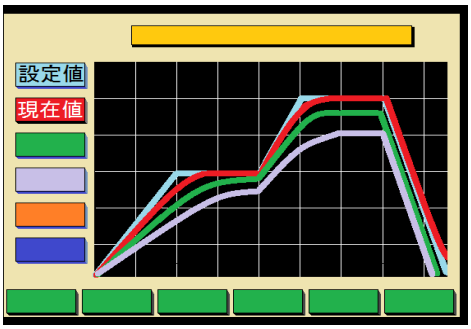
・The condition shortening of the tact time
・The tempering time management
・The normalizing time management





◆Trigger Shift function (optional)

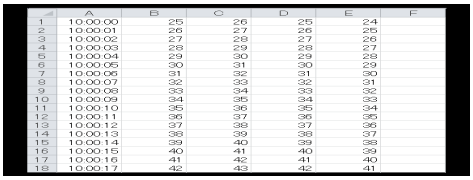
When the trigger is input, and then move on to the next set temperature.



◆Multi-monitor function

Temperature distribution can know in real time.

◆Memory card data folder function



Read the heating data from the memory card, and can edit the tables and graphs in EXCEL.

Design Number	Input	Output	Power	Loop
SSC-DC12V-300W-1L	AC85-264v	DC3-12v	300w	1Loop
SSC-DC24V-300W-1L	AC85-264v	DC5-24v	300w	1Loop
SSC-DC24V-600W-2L	AC85-264v	DC5-24v	300w x2	2Loop
SSC-DC36V-600W-1L	AC85-264v	DC7-36v	600w	1Loop
SSC-DC36V-1200W-2L	AC85-264v	DC7-36v	600w x2	2Loop
SSC-AC15A-1L	AC100-110/200-220v		15A	1Loop
SSC-AC30A-1L	AC100-110/200-220v		30A	1Loop
SSC-AC30A-2L	AC100-110/200-220v		15Ax2	2Loop
SSC-AC45A-3L	AC100-110/200-220v		15Ax3	3Loop
SSC-AC60A-1L	AC100-110/200-220v		60A	1Loop
SSC-AC60A-2L	AC100-110/200-220v		30Ax2	2Loop
SSC-AC60A-4L	AC100-110/200-220v		15Ax4	4Loop
SSC-AC90A-3L	AC100-110/200-220v		30Ax3	3Loop
SSC-AC120A-2L	AC100-110/200-220v		60Ax2	2Loop
SSC-AC120A-4L	AC100-110/200-220v		30Ax4	4Loop

*1.Temperature input : J,T,E,R,B,N,S,w5Re,w26Re,JPt100,Pt100
*2.Analog input :±10V, ±5V, 0-10V, 0-5V, 1-5V, 0-20mA, 4-20mA
*3.In order to use the water-cooled type halogen heater, water cooling system is required.
*4.HLH of high output type requires a separate cooling air.
*5.Nameplate will be created in designated language as much as possible.

Standard Function

Memory card data	Read the heating data from the memory card, and can edit the tables and graphs in EXCEL.
Multi-monitor	Displays the total 8CH of temperature input 4CH and analog input 4CH the trend graph.
Multi-temperature	Multistage, Sign-curve and Gradient heating setting by a touch panel.
Supervisor	Multiple signal and several heaters coordination heating function.
One-shot heating	Heating time can be established by one shots from the preset temperature arrival value.
Temp. input 4CH	K,J,T,E,R,B,N,S,w5Re,w26Re,JPt100,Pt100 4CH
Analog input 4CH	±10V, ±5V, 0-10V, 0-5V, 1-5V, 0-20mA, 4-20mA 4CH

General specification

Power supply	AC100-240v
Internal current consumption	1.6A(except the heater output)
Ambient temperature	0～50℃ (No freezing No condensation No dew)
Storage temperature	－10～+60℃ (No freezing No condensation No dew)
Use and storage humidity	35～85%RH (No freezing No condensation No dew)
Withstand voltage	AC1500V 1minute
Noise resistance	1500Vp-p Pulse width 1 μs,50ns
Insulation resistance	DC500MV- 5MΩ over
Use atmosphere	No Dust, No terribly corrosive gas
Use altitude	2000m or less
External dimensions	Height 250mm width 400mm depth 270mm (Standard type)
Mass	About 5kg (Standard type)

Touch panel specification

Display element	Ultra-high brightness TFT color LCD
Display dots No.	VGA 640x480
LCD life	About 5000 hours (Normal temp. and humidity)
Backlight life	About 5400 hours
Touch switch life	1million times or more (touch switch actuating force 0.98NT below)

Memory card specification

Storage element	CF compact flash card EEPROM
File type	CSV
Memory capacity	128MB
Number of rewrites	100,000 or more times
Storage capacity	Maximum 128MB, 262144 files

Optional Function

TA4	Temperature and analog multiple input 4CH
HL	High-Low Control for rapid-heating or preheating
TR	When the trigger is input, and then shift move on to the next set temperature.
RC1	Heating start or stop in the signal from outside
RC2	Specified output voltage in 4-20mA from outside
RSP	Specified thermocontroller temp. in 4-20mA
PVMON	Monitor, Output 4-20mA signal the temperature of the heating object.
SVMON	Monitor, Output 4-20mA signal the temperature of the set volume.
RS485	RS-485 Communication
IOT	IOT function
ACOUT	Power supply for AC Air cooling fan.
DC24	DC24V power supply cooling fan
AirV	Air opening and closing valve
OFDT	Air closing valve, heating stop after the cooling timer 5 minutes
BO	With heater burnout detection and display. With current limiter.
OVH	Over-heat Alarm. (For ABH/DGH□v-□w/□□/+2S type)
WP	Cooling water pressure shortage alarm
AP	Air Blow Heater and terminal cooling air pressure shortage alarm
CFS	Cooling fan stop detection signal processing
FPR	Front Protection Rail
RPR	Rear Protection Rail
Power Cable	Manufacture the specification of the power cable.
+α	If user need a function other than the above, please contact us.

* When the function is added, there is a possibility that change is external size.

Non-touch High temperature heating

Heat-tech

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