For only customers who use ADVANCE RIKO products

July, 2021

# Service booklet

## Desktop Mini Lamp Annealer

# MILA series


ADVANCE RIKO

Dear customers,

Thank you very much for your patronage of our products.

According to our company policy as customer first, we offer the service booklet in order to use our products for possible longer period.

We hope that this would be helpful for you.

Thank you very much.

ADVANCE RIKO, Inc.

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# 1. Enhanced function (Modications and additional options)


## Available options on each model

| | | | System | | | |
|---|---|---|---|---|---|---|
| | | | MILA-3000 | MILA-5000 | MILA-5000UHV | MILA-5050 |
| Additional functions | ① | **Visualization** | ○ | ○ | ○ | – |
| | ② | **Electric resistance measurement** | ○ | ○ | ○ | ○ |
| | ③ | **Rapid cooling** | ○ | ○ | – | ○ |
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# ① Visualization

**It can observe the process during rapid heating in real time and visualize the status change of the sample.**

**MILA-5000 + Camera Unit**

## Details of remodeling

- Observation window, camera unit (CCD or CMOS camera), and light source unit as additional items.
- Replace a standard protective tube with the original one for observation.
- Connect PC set for data collection.

## Features

Observe sample state changes while heating, then caoture the image data into the PC.

## Examples of observation when heating



# ② Electric resistance measurement

**It is possible to measure the electrical resistance in chnaging the temperature.**

**MILA-5000 + TER Unit**

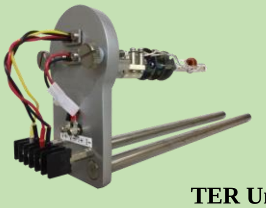
## Details of remodeling

Replace a standard moving flange with the original one for measuring electric resistance.

## Features

Simply replace with an electrical resistance measurement unit (TER unit) and connect it to your digital multimeter (DMM) to measure electrical resistance while heating.

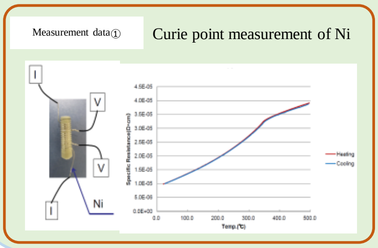
## Variation

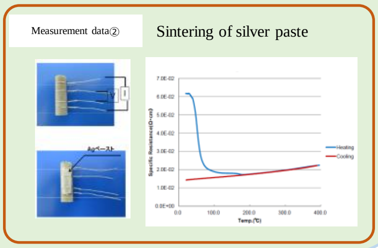


**TER Unit**

**Standard type** **Probe type**

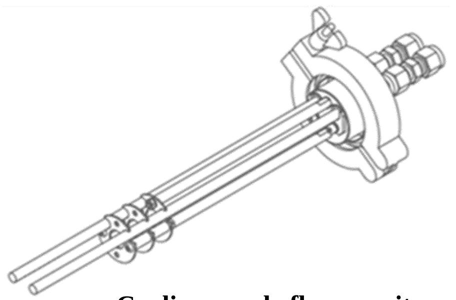
## Measurement example



# ③ Rapid cooling

**Realized rapid cooling and enable it to make cyclic test of the sample.**



**Cooling nozzle flange unit**

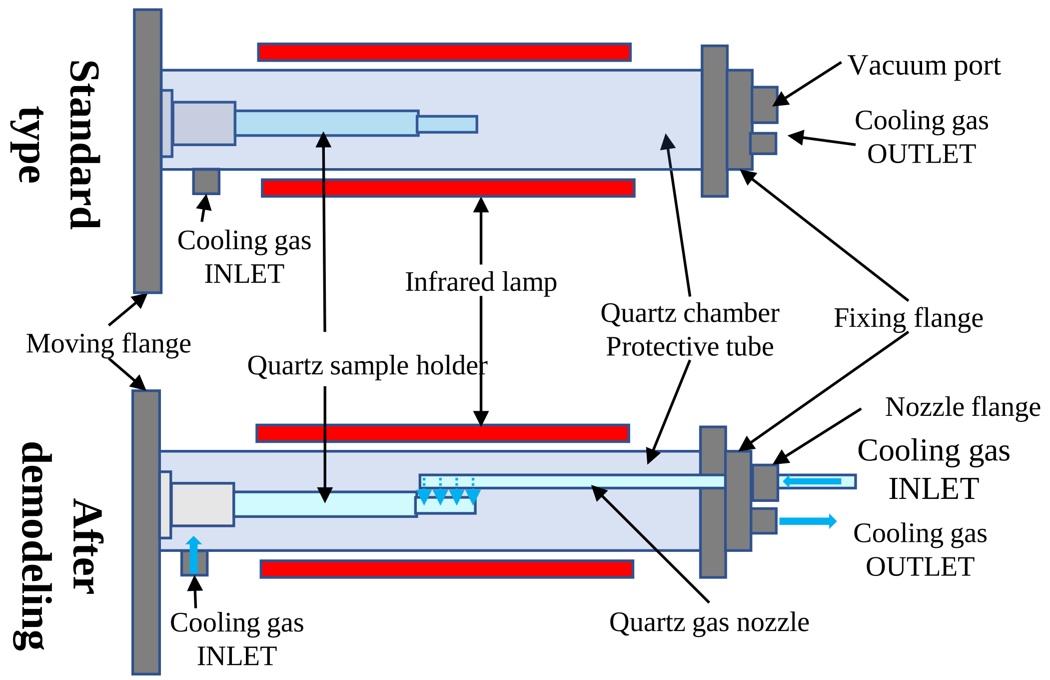
## Details of remodeling

Mount the cooling nozzle flange unit to the vacuum outlet and enable to make rapid cooling by blowing gas directly onto the sample.

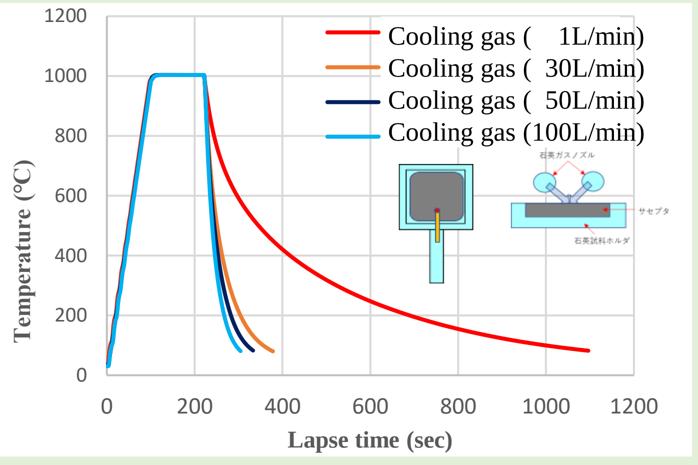
## Features

Rapid cooling is possible blowing gas directly onto the sample.

## Configuration image diagram

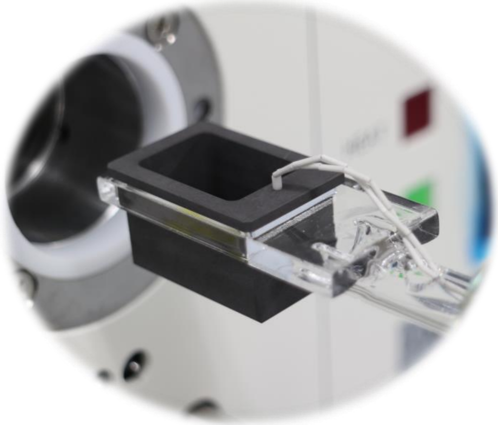



## <Measuring example> Comparing cooling rate



# ④ Powder heating

**It can set powder samples easily with original sample holder and susceptor.**



**Sample assembly for powder samples**

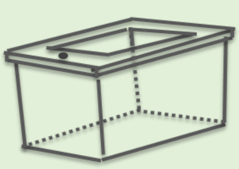
## Details of remodeling

Replace original thermocouple, sample holder, and susceptor.

## Features

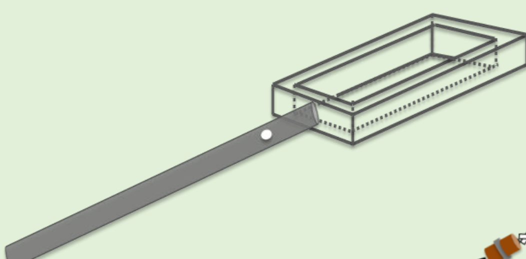
It can make heat treatement for large amount of powders with larger capacity of sample holder at one time.


## Replacement parts

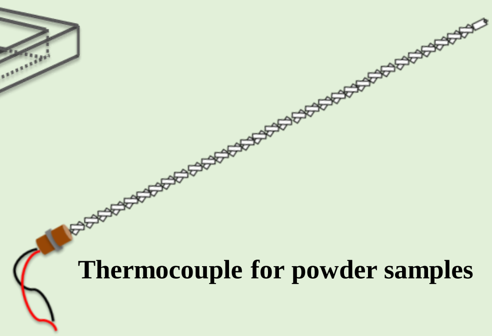


**Susceptor**
**for powder samples**
**(Sample container)**

Material: High purity carbon
Inner dimensions: W 17 × L 25 × H 19 mm



**Quartz sample holder**
**for powder samples**



**Thermocouple for powder samples**

※ It is possible to change the suitable material and dimensions of the above parts depending on various types of samples.

# ⑤ High vacuum

**It is possible to make rapid heating under high vacuum with a TMP (turbo molecular pump).**

**Turbo molecular pump + Dry pump**

## Details of remodeling

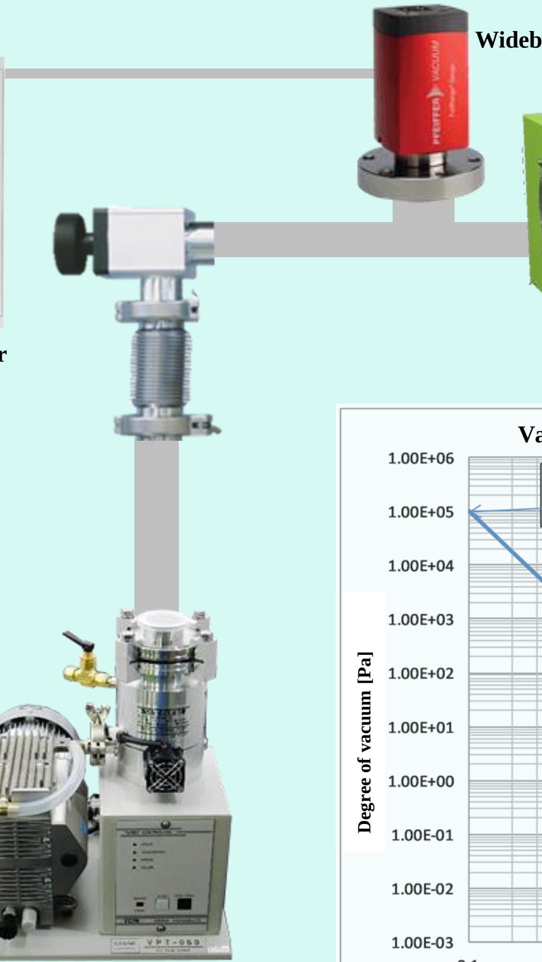
Mount vacuum system unit (turbo molecular pump, dry pump, wideband vacuum gauge, vacuum indicator and vacuum pipe).

## Features

- It can modify to high vacuum specifications by simply mounting the vacuum system unit additionally to the vacuum outlet.
- Ultimate pressure for the respective system
  MILA-5000・5050　: $10^{-3}$Pa level
  MILA-5000UHV　: $10^{-5}$Pa level

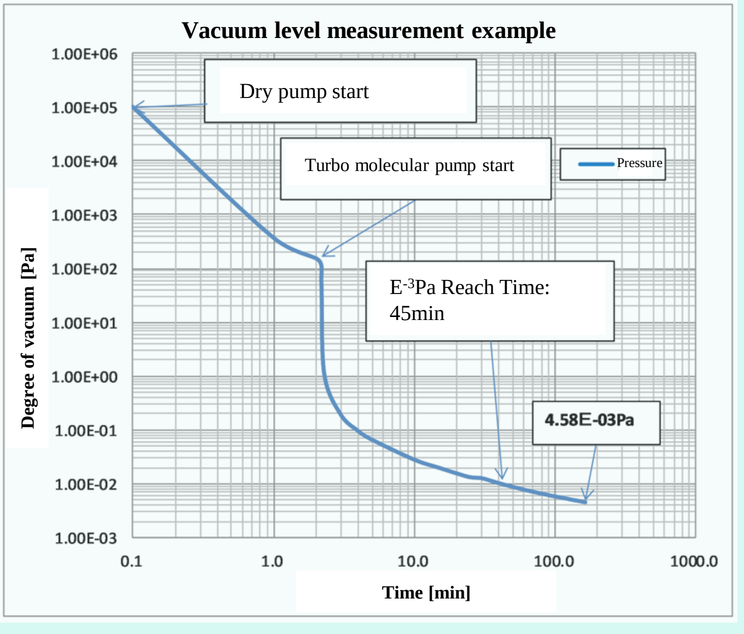
## Image of expansion

**Vacuum indicator**



**Wideband vacuum gauge**

**MILA-5050**




**Turbo molecular pump + Dry pump**

| | |
|---|---|
| System configuration | : MILA-5050 + Turbo molecular pump + Dry pump |
| Ultimate vacuum | : 4.58 × $10^{-3}$Pa |
| E-3Pa Reach Time | : 45min |
| Exhaust rate | : 60L/s |

# ⑥ Special gas atmosphere

**Heat treatment is possible in a corrosive gas atmosphere such as ozone and ammonia.**


## Details of remodeling

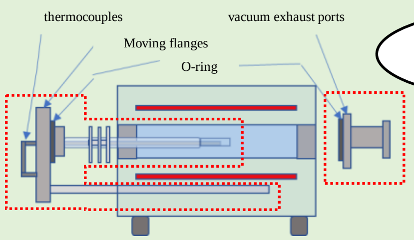
Replace thermocouples, moving flanges, vacuum exhaust ports, and O-rings with compatible parts for corrosive gas.

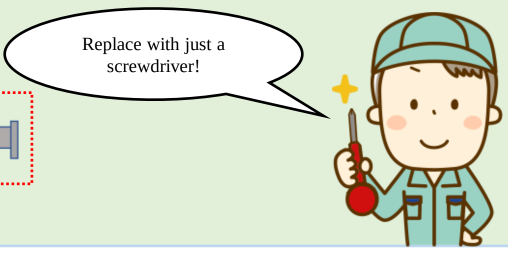
## Features

- It is possible to handle special gases with simple modifications of the parts that contact with the gas to compatible parts for corrosive gases.
- We can offer several type of thermocouples depending on the type of gases and sample material.

## Configuration image diagram

Replacement parts surrounded in red frame.




# ⑦ Automatic gas introduction

**It can automatically control various gases flow following temperature program.**


**MILA-5050 + Gas-Supply Unit**

## Details of remodeling

- Connect the gas supply unit
- Replace the temperature controller inside the system.

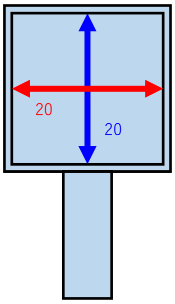
## Features

- Selectable gas flow controller from mass flow controller or float type flow meter.
- No need to switch gas manually. It can switch automatically according to the set temperature recipe.

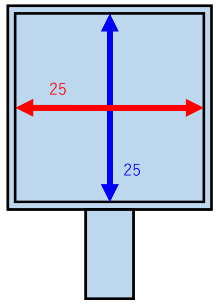
# ⑧ Sample holder list

**Sample holders list for each MILA Series**
**We can offer custom-made holder depending on your request.**

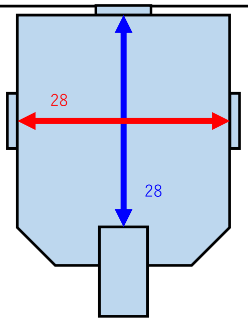
## For MILA-5000/3000 Series



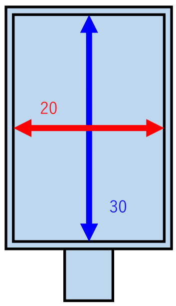

Standard type (20mm square)
#4040127



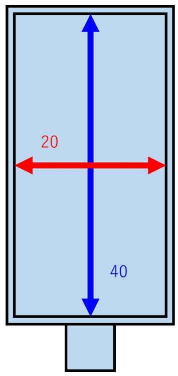

Type 25 (25mm square)
#4045995




Type 28 (28mm square)
#4049790

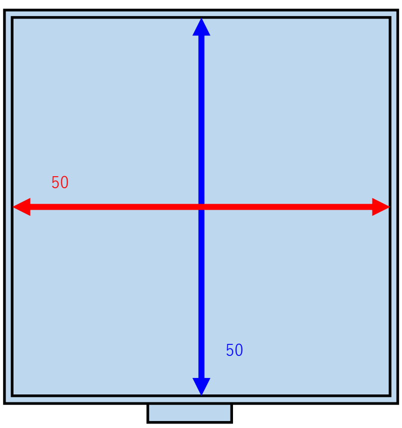



Type 20 x 30 (W20 x L30mm)
#4047279

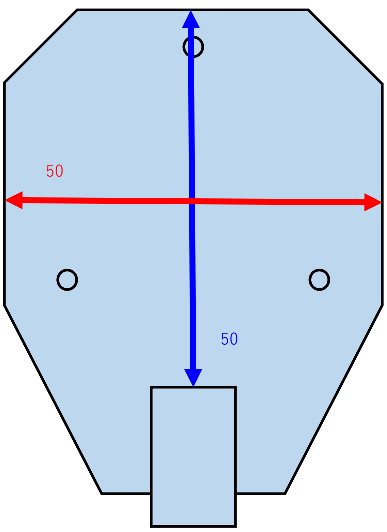



Type 20 x 40 (W20 x L40mm)
#4051254

## For MILA-5050




Standard type ( 50mm square)
#3046263



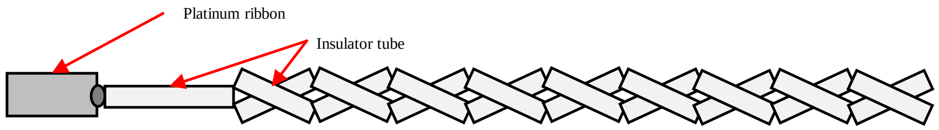

φ50 type (φ50mm)
#3046246

### ⚠ Attention

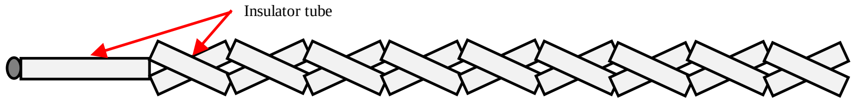
- We ask for your understanding that we can't guarantee the temperature uniformity areaexcept for the standard type.
- Please contact us for pricing. (The pricings will be higher than the standard type except for the standard type.)

# ⑨ Thermocouple list

**List of thermocouple available for MILA Series**
**Custom-made production is also possible according to your request.**

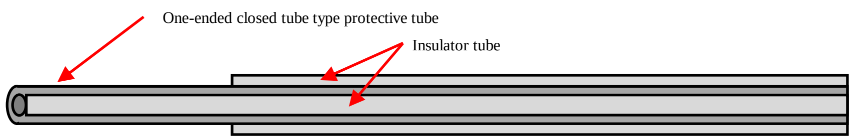



Standard type
(JIS-K type with platinum-ribbon)




For the susceptor


Sheath thermocouple type




For special gases
(Suceptor can be used)

## ⚠ Attention

・Select thermocouple wire from JIS-K and R type. Please contact us for other types (B, W-Re, etc.).
・Please contact us for pricing.

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