



### Introduction

Physiological effects on human beings by every type of chemical substances have been investigated widely and thoroughly year by year. The substances involve not only medical and pharmaceutical products, food additives, pesticides, etc. but also ordinary chemicals for industrial use and environmental pollutants. The mechanism of action of chemical materials inside the living bodies must be urgently explained more precisely. Also, in case that results of pharmacological or toxicological experiment applying animals are extrapolated, difference of breeds among animals should be clarified.

In such cases, it is necessary to feed intact animals with chemical substances repeatedly for a long term without giving mental stress and to take out separately the urine, feces, and evacuated matters in exhalation, continuously or at certain time intervals, so that metabolic process of chemical substances, and behavior of metabolic matters inside the living bodies can be traced. Such cages to satisfy the abovementioned needs have been enthusiastically requested.

METABOLICA® is a trademark registered for Metabolic Cage manufactured by Sugiyama-Gen. Now it is evaluated as an excellent metabolic cage with wide range of use owing to its mechanisms and functions. 2 types of METABOLICA® are available -----Type MC for Rats and type MM for Mice. Further, 3 types (ST, AP and CO2) are available depending upon applications.

Compared to the conventional metallic or plastic model, METABOLICA® is made of hard glass, so animals inside are observed clearly. Further, it can resist against corrosive materials such as chemicals or urine. Moreover, it is autoclavable for sterilization at a high temperature. Not only the cage itself but also individual parts are standardized, so perfect interchangeability is ensured.

With the type CO2, kinds of specimens are to be collected simultaneously, so the operation panel is set up in front of the apparatus for easy handling. In the exhalation-absorbing cassette, a soda lime tube for adsorbing the CO2 gas in the taken air, absorbing tubes for the CO2 gas in the exhalation, empty traps, and air flowmeters are accommodated in a component unit. As the apparatus is space-efficiently designed, there is no need for extra space. The urine and feces can be stored without being changed in quality or decomposed, for instance, by immersing each bottle into the stainless steel dewar.

The apparatus is applicable to other kinds of experiment such as the exposure to toxic gases without changing or rearranging the fundamental structure.

## Features

- Urine and feces are separated precisely by the spreader and separator, and are taken into respective bottles
- The cage is so compact with small dead space that air or gas flows very smoothly without stagnating in one place
- Compared to the conventional metallic or plastic model, METABOLICA® is made of hard glass, so animals inside can be observed clearly
- Can resist against corrosive materials such as chemicals or urine
- Autoclavable at high temperature
- Individual parts as well as cages are standardized and so perfect interchangeability is ensured
- Both cage and parts can be connected and disconnected for easy cleaning
- 1-10ch system configuration is available depending upon the fund

## Specification

Model		MC-CO2-3
Cage	Capacity	Approx. 7 litters
	Dimension	195 I.D. x 185 mm High
	Weight	Approx. 2 kg
S.S. Dewar	Dimension	240φ x 165 mm High
Rack	Weight	Approx. 3.1 kg
	Dimension	1000 W x 650 D x 1610 mm H
Air Pump	Weight	Approx. 70 kg
	Dimension	140 W x 170 D x 110 mm H
Power		Approx 2 kw

## MM-ST-6

## METABOLIC CAGE



Type MM-ST is specialized for mice. It is not merely a miniaturized rat cage, but is designed to suit to habits of mice which are different from those of rats. The cage ensures an ample space enabling mice to move around and breathe, and it employs unique feeding and urine collecting devices.

It is designed for the normal metabolism experiment. It is crowned, for practical use, with a transparent vinyl chloride disc with full of holes for air ventilation.

## Specification

Model		MM-ST-6			
Dimension		Rack MM-1ST	Rack MM-3ST	Rack MM-5ST	Rack MM-12ST
		280W x 380D x 550 mm H	940W x 500D x 1320 mm H	1480W x 500D x 1320 mm H	1750W x 500D x 1450 mm H
Cage	Capacity	Approx. 2 litters			
	Dimension	105I.D. x 145 mm H			
	Weight	Approx. 1 kg			
S.S. Dewar	Dimension	240 x 165 mm H			
	Weight	Approx. 3.1 kg			

## MC-ST

## METABOLIC CAGE



Type MC-ST is specialized for rats and designed for the normal metabolism experiment. The cover is a transparent 8 mm thick vinyl chloride disc with full of 10 mm diameter holes for good air ventilation, it is held with a donut like ring of the cage holder.

### Specification

Model		MC-ST			
Dimension		Rack MC-1ST	Rack MC-3ST	Rack MC-5ST	Rack MC-12ST
		350W x 520D x 1100 mm H	1000W x 520D x 1610 mm H	1600W x 520D x 1610 mm H	1900W x 520D x 1760 mm H
Cage	Capacity	Approx. 6 litters			
	Dimension	195 I.D. x 150 mm High			
	Weight	Approx. 2 kg			
S.S. Dewar	Dimension	240 x 165 mm High			
	Weight	Approx. 3.1 kg			

## MM-AP SERIES

## METABOLIC CAGE



Type MM-AP is specialized for mice and secures an air-tight enclosed space ( approx. 2 liters ) separated from the outer atmosphere by means of the gas diffusion cover. The glass parts are mutually connected by the ground joints which remain unaffected even under high-vacuum conditions. Our specially made ground joints are transparently and smoothly finished. So the contaminations are easily cleansed from its surface.

The cage and the gas diffusion cover are connected with each other, employing precisely ground flanges. The feeding cassette is connected with an "O"-ring air-tightly.

### Specification

Model		MC-AP			
Dimension		Rack MC-1AP	Rack MC-3AP	Rack MC-5AP	Rack MC-10AP
		350W x 520D x 1100 mm H	1000W x 520D x 1610 mm H	1600W x 520D x 1610 mm H	1600W x 520D x 1760 mm H
Cage	Capacity	Approx. 7 liters			
	Dimension	195 I.D. x 185 mm High			
	Weight	Approx. 2 kg			
S.S. Dewar	Dimension	240φ x 165 mm High			
	Weight	Approx. 3.1 kg			

### MC-AP-SERIES

### METABOLIC CAGE

Type MC-AP is specialized for rats and is applied for the gas inhalation experiment. The gas diffusion cover is tightly laid upon the head of the cage by applying grease to it, utilizing the same type of the ground flange as a normal glass desiccators. Thus an enclosed space ( approx. 6 liters ) is entirely shut out from the outer atmosphere.

The air/gas inlet is connected to the upper joint ( 29 φ ) of the gas diffusion cover. The thermometer is jointed directing to the inner side of the cage. The gas for inhalation is diffused into the cage and is evacuated from the air/gas outlet.



Model		MC-AP			
Dimension		Rack MC-1AP	Rack MC-3AP	Rack MC-5AP	Rack MC-10AP
		350W x 520D x 1100 mm H	1000W x 520D x 1610 mm H	1600W x 520D x 1610 mm H	1600W x 520D x 1760 mm H
Cage	Capacity	Approx. 7 liters			
	Dimension	195 I.D. x 185 mm High			
	Weight	Approx. 2 kg			
S.S. Dewar	Dimension	240φ x 165 mm High			
	Weight	Approx. 3.1 kg			



With type CO<sub>2</sub>, kinds of specimens are to be collected simultaneously, so the operation panel is set up in front of the apparatus for easy handling.

In the exhalation-absorbing cassette, a soda lime tube for adsorbing the CO<sub>2</sub> gas in the taken air, absorbing tubes for the CO<sub>2</sub> gas in the exhalation, empty traps, and air flow meters are accommodated in a component unit. Therefore, the apparatus is very compact and needs no extra space

### Specification

Model		MC-CO2-3
Cage	Capacity	Approx. 7 liters
	Dimension	195 I.D. x 185 mm High
	Weight	Approx. 2 kg
S.S. Dewar	Dimension	240φ x 165 mm High
Rack	Weight	Approx. 3.1 kg
	Dimension	1000 W x 650 D x 1610 mm H
Air Pump	Weight	Approx. 70 kg
	Dimension	140 W x 170 D x 110 mm H
Power		Approx 2 kg