GROW ENGINEERING CO.,LTD.

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GROW MILL
EASY POINT CONTROL
MULTI MILL
Mukin CHOPPER
SHARK MILL
Yasai CRUSHER
CHAMBER MILL
ROTARY CUTTER
PERMUTE
DISK CUTTER
ROTARY CUTTER

Comprehensive Catalog of Grinder Mills
Ver. 1.5

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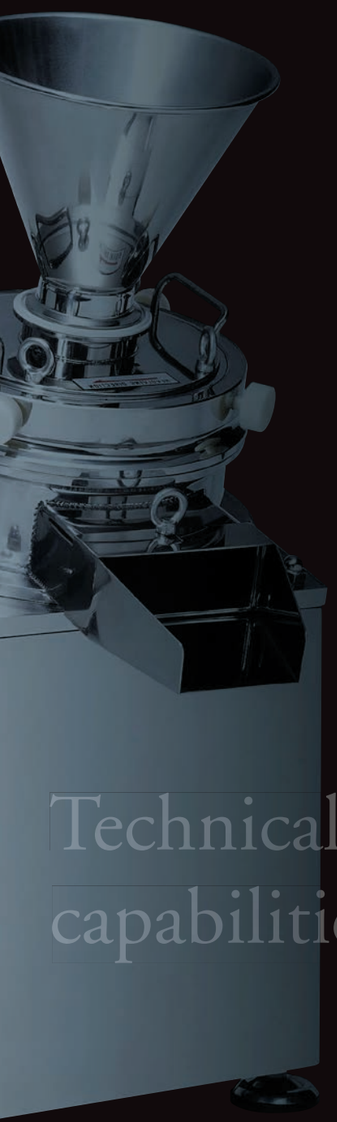


Technical capabilities

Manufacturing development of machines through unique technologies gained from a long history

Finishing with a subtle texture and taste achievable only through the manual work of craftsman. Ease of disassembly for cleaning. Significant increase in throughput.—By responding to these and other strict requirements at user sites, GROW ENGINEERING has cultivated unique technical capabilities. The Grow Mill pulverizes materials in micro units, achieves high-density stone milling unavailable with convention systems, and realizes clearance adjustment in units of 0.005 millimeters. The Shark Mill grinds materials into paste at a capacity of 600 kilogram per hour without the need for preprocessing, even for food ingredients with tough fibers. The Mukin Chopper, which facilitates cleaning and sterilization while preventing raw materials from infiltrating the drive area. Customers have given outstanding evaluations all of these unique machines. Furthermore, the function and performance of our machines are highly recognized by users in industrial industries, and use of our machines in industrial applications is proceeding rapidly.

***Customized products and improved functionality are provided with short delivery times.**

Service & Support

Our company provides a variety of consultations and tests before installation. Furthermore, you can entrust us for post-installation services and support with peace of mind. Valuable information obtained from user sites is used as feedback for further improving our products and benefiting users. This relationship of trust with our users has created a positive cycle which has supported our company's operations over many years.

Supporting Your Company's Unique Product Development and Materials Prototype

We have overcome various challenges for the grinding of materials in order to realize our customers' ideas; for example, the development of new foods. How efficiently can we process the required materials? What is the optimal processing method? What kind of machinery is required for processing?—GROW ENGINEERING will use our technology and services to provide you with powerful support in development, a field in which speed is essential in order to be competitive.

Utilizing extensive know-how and the power of information to increase the efficiency of production plants.

The environment surrounding production plants is extremely difficult due to phenomena such as labor shortages and reduced facilities investment. However, it is also necessary to further increase productivity at plants. In order to resolve this severe situation, increasing the efficiency of production lines is an urgent task.
In order to support these needs, GROW ENGINEERING provides total support from production line planning to design, production, and maintenance.
We will respond to the needs of each plant by utilizing our extensive know-how and information in projects such as planning and system upgrades for achieving optimal production lines in your factory, as well as improvement of existing production lines.

Trust GROW ENGINEERING for all your production facility needs

Consulting

Is your company experiencing any problems with production lines, machines, or equipment?
I want to further increase production efficiency.
"I want to install new machinery; what do you recommend?" "Which machines are optimal for our plant?"—GROW ENGINEERING responds accurately to such on-site needs by utilizing our extensive information and know-how.

Internal Plant Layout

The layout of machines and devices is important for effective use of limited plant space. By considering factors such as the number of employees, production line features, and product characteristics, GROW ENGINEERING will design the optimal layout of machinery and equipment in your plant. Moreover, we propose measures to eliminate danger spots. The result is smooth operation of the production line while maintaining a comfortable work environment.

System Planning and Production

We will create an optimal production line system for your plant by considering plant space, number of workers, target production volume, product characteristics, and budget.

System Upgrade
(orders accepted for single products)

GROW ENGINEERING accepts orders for single machines and devices. "I want to further improve our system while getting maximum benefit from the existing production line."—We respond to such requests by delivering machines and equipment that will improve the productivity of your plant.

Main Handled Products

■ *Conveyors*
Belt conveyors
Roller conveyors
Vertical conveyors
Tanks
Mohno pumps
…and more

■ *Mixers & Stirrers*
Tumblers
Powders
Plastics
Liquids
Paste mixers
…and more

■ *Grinder Mills*
Impact type
Stone mill type
Choppers
Crushers
Cutter mixers
Cutters
…and more

■ *Dispersers, classifiers*
Dehydrators, fixed quantity fillers

■ *Heat exchangers, dust collectors*

■ *Refrigerators, freezers*
Defrosters, dryers

GROW MILL (GRINDER)

Dry | Wet | Fine grinding

Fine crushing, de-agglomeration, sizing, dispersion

Versatility unique to stone mill grinders.
High-density grindstone for an unparalleled cutting edge and processing capacity.
Decomposition time of about one minute.

From tableware to industrial usage

The Grow Mill utilizes the principle of a stone mill. Ever since the first prototype of the Grow Mill was made about 30 years ago, it has evolved into its current style over many years of unique technology improvements by our company. The Grow Mill is characterized by its ability to simultaneously perform a wide range processes for all types of materials from foods to industrial materials. The Grow Mill can shear, grind, atomize, disperse, emulsify, and fibrillate.
The superior cutting edge and processing ability of the Grow Mill has been recognized by countless users, all of whom rely on the Grow Mill to perform various kinds of processing.

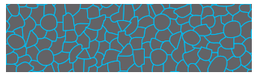
GMU-30

GM6-36

Grinder Cross-Section

Patented
Patent No.: 2046209

GROW ENGINEERING's high-density/poreless grinder



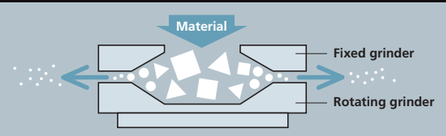
- Outstanding cutting edge and processing ability.
- No occurrence of bacteria.

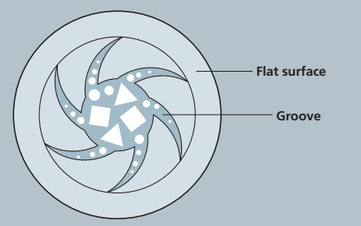
Conventional poreless grinder

Conventional porous grinder

Principle

The Grow Mill is a stone mill grinder with two upper and lower grindstones. Raw materials are pulverized into ultrafine particles when exposed to the impact, centrifugal force, and shear force generated by passing through the clearance between the grindstones. The particle size can freely adjusted simply by setting the clearance (the gap between grindstones). Contact operation is possible by using a ceramic stone mill with a special structure, thus making it possible to grind ultrafine particles under the size of a micron.





Clearance (one graduation) = 0.005 mm
Rotating grinder rises and lowers.

- Continuous processing enables mass production.
- Simple structure for easy operation and cleaning.
- Use for grinding film (polyimide).
- Mousse can also be created in a short period of time.
- Also achieves an optimal mixing effect for dressings.

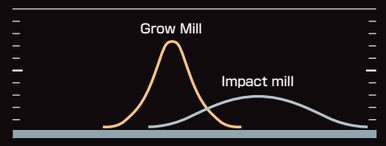
Absolutely no need to strain corn soups, etc. 100% of ingredients can be utilized.

For example, if you were making three liters of corn soup, it would take sixty minutes to strain the soup by hand. The Grow Mill complete eliminates this troublesome task. The ingredients are ground without any residue in just three minutes, so you can use 100% of the ingredients.

Stable atomization for high yield.

The stone mill achieves extremely sharp particle size distribution. The Grow Mill enables you to use 100% of ingredients, even those ingredients which were wasted with conventional mills.

■ Particle size distribution



Clearance (the gap between grindstones) can be easily adjusted in graduations of 0.005 mm.

This provides peace of mind when setting the granularity which determines product quality. Also, clearance can be adjusted during operation.

Also supports custom grinders

Regardless of whether you are using a GROW ENGINEERING product or another company's product, if your current grinder fails to satisfy your expectations, we will utilize our experience and know-how to manufacture the optimal grinder for your needs.

We offer a wide range of diverse grinders. We can also manufacture original grinders depending on the intended usage.

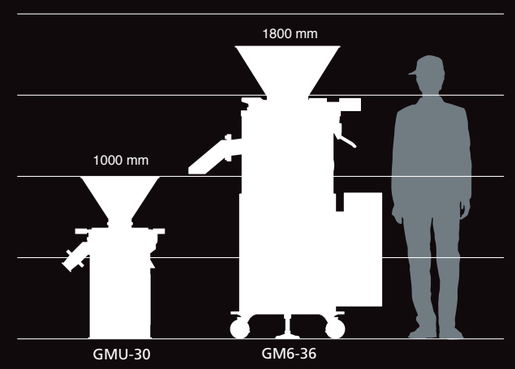
Wide range of variations

Processing capacity changes depending on the grinder diameter.

■ Specifications

Model	Grinder size (diameter)	RPM	Processing capacity	Machine dimensions	Weight	Power source
GMU-30	ø30cm	MAX1800rpm	360～500 kg/Hr	ø400mm H1000mm	105kg	AC200 V 3.7/5.5 kW 3-phase
GM2-20	ø20cm	MAX1800rpm	50～700 kg/Hr	ø300mm H1100mm	133kg	AC200 V 3.7 kW 3-phase
GM4-25	ø25cm	MAX1800rpm	100～1000 kg/Hr	ø400mm H1300mm	230kg	AC200 V 7.5/11 kW 3-phase
GM4-25CF	ø25cm	MAX3000rpm	200～2000 kg/Hr	ø400mm H1300mm	250kg	AC200 V 7.5/11 kW 3-phase
GM5-30	ø30cm	MAX1800rpm	200～1800 kg/Hr	ø400mm H1600mm	290kg	AC200 V 11/15 kW 3-phase
GM6-36	ø36cm	MAX1800rpm	300～2500 kg/Hr	ø460mm H1800mm	400kg	AC200 V 22/30 kW 3-phase

* Processing capacity is a reference value. (The value may vary depending on factors such as the flat surface area, peripheral speed, clearance, material fluidity, and material size/hardness.)
* Please contact us for custom specifications.



■ Example Usage

Food products	Demi-glace sauce, corn soup, sesame paste, soy pulp, soybeans, red beans, rice flour, vegetable paste, mousse, cheese, butter, mayonnaise, peanut butter, plums, various salts
Spices	Chili bean sauce, ginger paste, garlic paste, sauce ingredients, sake lees, moromi (raw unrefined sake or soy sauce), miso
Medicine/cosmetics	Various medicinal creams, ingredients for various traditional herbal medicine (lingzhi mushroom)
Industrial materials	Grinding and dispersion of activated carbon, metal oxide, lithium hydroxide, polyimide, film, carbon, glass, resin, water-soluble paint, nickel oxide, and grease

EASY POINT CONTROL

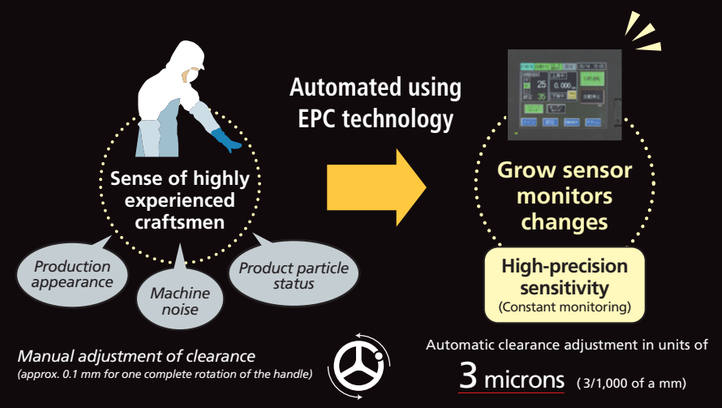
GM-EPC

Easy Point Control Technology

EPC Technology®

A revolution in stone mill grinders.
Automatic high-precision adjustment far surpassing human senses.
Achieves dramatic increases in production efficiency.

Previously, fine adjustment of clearance for grinders was only possible by highly experienced craftsman. However, our unique EPC technology performs automatic adjustment during operation, thus dramatically increasing quality control and manufacturing efficiency. We apply our highly reliable and cutting-edge technology gained at large plants to create a revolution in the world of grinder mills.



Easy handling even for beginners

The initially set clearance value is automatically maintained for a long period of time. Operation consists simply of turning a switch on and off, making handling easy even for a beginner.

High-precision adjustment surpassing human senses

Clearance is adjusted in units of 3 microns (3/1,000 mm). High-precision adjustment that goes far beyond human senses enables your company to create unique products and meet strict customer requirements.

One person can manage multiple machines

EPC technology quickly senses and automatically adjusts for changes occurring during machine operation.
The operation status can be checked with a single glance at the operation panel. This eliminates the previous troublesome tasks such as stopping operation at regular intervals to check products. As a result, on person can manage multiple machines.

Easy and accurate sampling

Clearance at the time of sampling can be saved as data and a data history can be recorded. Even if you created dozens of prototype samples in the past, it is easy to instantly reproduce the same clearance with high precision. In addition to increasing accuracy, this also significantly reduces troublesome tasks by workers.
The data history can also be used in materials submitted to the customer, thus contributing to improved trust.

Can be attached to all products in GM series

EPC technology is designed for attachment to existing products in our company's series of GM grinders. There is no need to purchase new machinery.

High reliability

EPC technology is a reliable system that operates stably for a long period of time without being affected by changes in the machine operation or surrounding environment. Delicate adjustment of grinder clearance can be entrusted to the system with peace of mind.

*The grinder expands due to factors including the influence of surrounding machines, differences among raw material lots, seasonality, and the frictional heat of the grinder. This cause clearance to narrow in micron units. As a result, the particle size of the product may fluctuate or the raw material may be burnt.

Specifications

Model	Servo motor
GM2-20	200W
GM4-25	200W
GM4-25CF	400W
GM5-30	400W
GM6-36	400W

Grow Mill: Grinder Lineup

NP

Patented

Features: Molded using sharp abrasive grains with high density and no porosity. The superior sharpness of the grinder achieves high processing capacity while suppressing the temperature.
Type:
Diameter: 15 cm (6 inches), 20 cm (8 inches), 25 cm (10 inches), 30 cm (12 inches), 36 cm (15 inches)
Abrasive grain size: 16 mesh, 46 mesh
Groove shape: A groove (narrow), B groove (wide), no groove, custom grooves
Material: Silicon carbide (Sic)
Usage: Sesame paste, soy beans, soy pulp, chili bean sauce, ginger, etc.

Alpha NP

Patented

Features: Molded using sharp abrasive grains with high density and no porosity. Creates a fine and smooth fine particle paste in a chevron shape.
Type:
Diameter: 15 cm (6 inches), 20 cm (8 inches), 25 cm (10 inches), 30 cm (12 inches), 36 cm (15 inches)
Abrasive grain size: 16 mesh, 46 mesh
Groove shape: A groove (narrow), B groove (wide), no groove, custom grooves
Material: Silicon carbide (Sic)
Usage: Sesame paste, corn soup, vegetable paste, etc.

VC

Features: Molded using sharp abrasive grains with high density. Creates smooth and minute particles. It has a greater hardness than the NP, so the VC can be used for hard materials. Superior resistance against wear.
Type:
Diameter: 15 cm (6 inches), 20 cm (8 inches), 25 cm (10 inches), 30 cm (12 inches), 36 cm (15 inches)
Abrasive grain size: 16 mesh, 46 mesh, 80 mesh
Groove shape: A groove (narrow), B groove (wide), no groove, custom grooves
Material: Silicon carbide (Sic)
Usage: Fruit seeds, carbon, activated carbon, resin, livestock bones, etc.

Alumina

Features: Manufactured as an integrated unit from pure alumina. Capable of processing raw materials with high wear resistance.
Type:
Diameter: 15 cm (6 inches), 20 cm (8 inches), 25 cm (10 inches), 30 cm (12 inches), 36 cm (15 inches)
Integrated molding using alumina ceramic
Groove shape: A groove (narrow), B groove (wide), no groove, custom grooves
Material: Alumina (Al2O3)
Usage: Glass, silica, egg shells, etc.

Silicon nitride Tungsten carbide Diamonds

* Custom grinders are available in addition to the grinders listed above. Please feel free to contact us regarding any requests that you may have.
* We also accept orders for custom grinders.
* We also support compatibility with grinders from other manufacturers. Please contact regarding any compatibility questions.

MULTI MILL

RD1-15 RD2-15 RD2-20

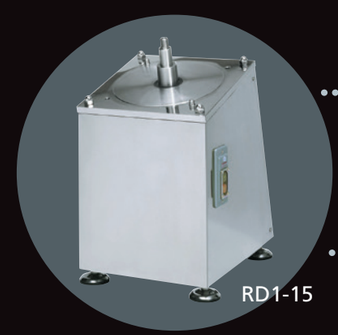
Dry | Wet | Rough grinding | Grating

Patented
Patent No.: 2613174

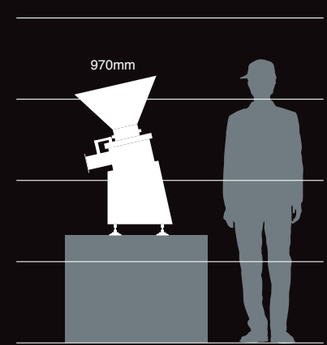
Five functions in one machine.
Equipped with an inverter control panel as a standard feature.
Ideal for R&D and small-lot high-mix products.
Easy-to-use and high performance.

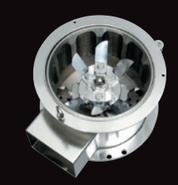
*Cart is optional.

The Multi Mill can perform five types of grinding. You can select the type of grinding according to your purpose and application.
This patented mill is not offered by any other company.
All of the Multi Mill attachments can be replaced (patented), which makes it easy to wash and popular with customers.
Each grinding part (attachment) can be easily disassembled and assembled even by female operators, and the removed parts can be washed in a sink. Since the inverter is built into the separate control panel, the rotation speed can be adjusted in a range from 600 to 3,600 rpm.
Another feature is relatively quiet startup noise which is easy on the ears. Control panel options include touch panel models and dedicated aluminum frame mounts. Grinding characteristics for the five types of attachments are shown on the right.



RD1-15



Attachment	Wet/Dry Type	Features
G *Grinder* 	Wet and dry	The grinder features many type of grindstones which can be selected according to the raw material and purpose. The manufacturing patented NP grindstone prevents the propagation of various types of germs. A wide range of grinding is possible by combining the type of grindstone, the clearance between the upper and lower grinding wheels, and the grinding wheel rotation speed. Wet grinding produces a creamy and smooth paste. Dry grinding tends to round the pulverized particles, resulting in a different type of powder from the impact type. *Refer to page 4 for basic principles.
H *Hammer Mill* 	Dry	Materials are powderized by the impact of a hammer. You can change the pulverized particle size by changing the pore size of the screen. Ideal for producing small amounts of powder. A cutter blade can also be installed. *Refer to page 17 for basic principles.
S *Shark Mill* 	Wet and dry	Instantaneous grinding by a knife rotating at high speed. You can change the pulverized particle size by changing the pore size of the screen. The Shark Mill is sometimes used as a preprocessor for grinding. Even large materials measuring about 10 cm can be ground. Powder can be produced by dry grinding. Supports various applications from coarse grinding to fine grinding. Perfect for multi-purpose usage. *Refer to page 12 for basic principles.
Y *Crusher* 	Wet and dry	Uses a durable knife to roughly cut onions, apples, and other materials into chunks measuring 1 to 2 cm. Also suitable as preprocessing for squeezing juice. Ideal for vegetable disposal (weight reduction). *Refer to page 14 for basic principles.
C *Cutter Mixer* 	Wet and Dry	Batch grinding and mixing. Both paste and powder can be ground, mixed, and stirred. Perfect for mixing and stirring powders.

Two types of motor horsepower are available: 2 hp (1.5 kW) and 5 hp (3.7 kW). We recommend 5 hp if the load during grinding is high due to usage of hard and sticky raw materials. For the 5 hp type, you can also use a grinder attachment with an external diameter of 20 cm for large processing capacity.

Compatibility of attachment and motor horsepower

Model	Motor horsepower	Grinder	Hammer Mill	Shark Mill	Crusher	Cutter Mixer
RD1-15	2 hp (1.5 kW)	External diameter: 15 cm	✔	✔	✔	✔
RD2-15	5 hp (3.7 kW)	External diameter: 15 cm	✔	✔	✔	✔
RD2-20	5 hp (3.7 kW)	External diameter: 20 cm	✔	✔	✔	✔

■ Specifications

Model	Machine dimensions	Weight	Power source
RD1-15	270×560×H880mm	57kg (grinder)	AC200 V 1.5 kW 3-phase
RD2-15	285×560×H940mm	80kg	AC200 V 3.7 kW 3-phase
RD2-20	285×560×H950mm	90kg	AC200 V 3.7 kW 3-phase

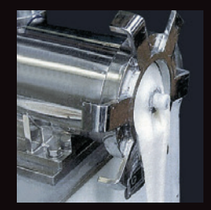
Attachment	Specifications	Processing capacity	Machine dimensions (when RD1-15 is attached)
Grinder	Grindstone diameter: 150/200, wet/dry, alumina	15～100 kg/Hr	270×360×H890mm
Hammer mill	Hammer diameter: 187, 6 hammers	1～10 kg/Hr	270×360×H800mm
Shark mill	Knife diameter: 250, 2 knives	30～100 kg/Hr	270×360×H970mm
Crusher	Grinding chamber diameter: 180, 2-stage knives	30～100 kg/Hr	270×360×H990mm
Cutter mixer	8 liters, diameter: 240, 2 knives	10～50 kg/Hr	270×360×H650mm

* Processing capacity is a reference value. (The value may vary depending on factors such as the fluidity of raw materials and the size/hardness of raw materials.)
* An optional fixed-quantity feeder and cart are also available.

Mukin CHOPPER

Wet | Rough grinding

Yams, ground sesame, other

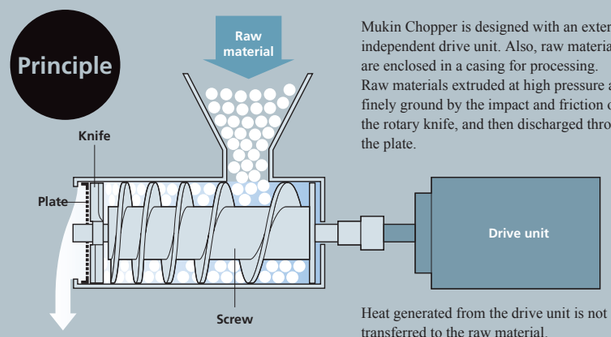


Completely separates the casing (grinding chamber) and drive unit (patented).
Since raw materials do not enter the drive unit, cleaning and sterilization are easy.
The chopper can also leave a lumpy texture.

When using conventional choppers to process ingredients such as yam paste, there was a problem with yams entering the drive unit. Even after cleaning, material which had adhered during the previous usage comes out during subsequent usage. However, our Mukin Chopper has solved this problem by completely separating the casing (grinding chamber) and drive unit (patented).

GECY-10

Principle



Mukin Chopper is designed with an external independent drive unit. Also, raw materials are enclosed in a casing for processing. Raw materials extruded at high pressure are finely ground by the impact and friction of the rotary knife, and then discharged through the plate.

Heat generated from the drive unit is not transferred to the raw material.

Disassembly and Cleaning

Technology unique to GROW ENGINEERING **Patented**

Patent No.: 2670764

Grinding chamber | Drive unit | Separation | Cleaning/sterilization

Sterile condition is easily maintained.

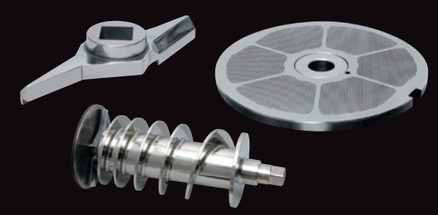
Since the casing (grinding chamber) is isolated from the drive unit, it can be cleaned thoroughly. This makes it is easy to ensure sterility. The casing (grinding chamber) can be assembled and disassembled in about 3 minutes, so it is not a troublesome task during daily work.
In addition, the design prevents the temperature from rising during grinding (see below). This means that bacteria are less likely to occur.

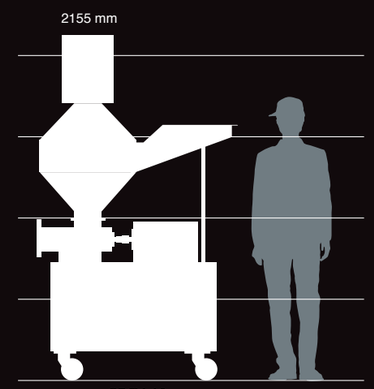
Low-temperature grinding. Also optimal for food products which do not use heat processing.

Since Mukin Chopper is designed to reduce the load on raw materials and products, almost no crushing heat is generated. This makes the chopper ideal for processing raw materials which should be kept away from heat.

Create your desired product by optimally balancing the shape of the helix, knife and plate.

The shape of the knives and plates (holes) used for grinding are determined according to the raw material characteristics and the size of the finished particles. The role of the helix is to feed the raw material; however, it is important to achieve a smooth flow to prevent a load from being exerted on the raw material.
The desired product is manufactured by calculating and adjusting this delicate balance.





GECY-10

Specifications

Model	Plate diameter	Processing capacity	Machine dimensions	Power source
GECY-42	ø130mm	90～100 kg/Hr	590×840×H1760mm	AC200 V 7.7 kW 3-phase
GECY-10	ø250mm	300～500 kg/Hr	800×1230×H2155mm	AC200 V 11.4 kW 3-phase

* Processing capacity is a reference value. (The value may vary depending on factors such as the shape of the plate hole, the fluidity of the material, and the size/hardness of the material.)

Example Usage

Processing yam paste, ground sesame
Processing frozen meat, crushing bones

SHARK MILL

Dry | Wet | Rough grinding | Grating | Grinding/ mixing

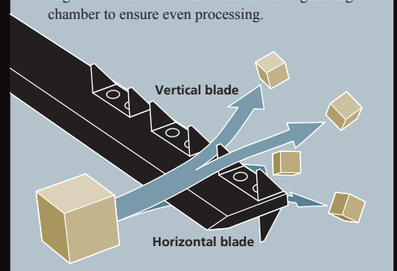
Our original technology creates paste from strong fibrous raw materials without any preprocessing.
Low temperature processing is also possible.

Previously, strong fibrous raw materials had to be preprocessed using a crusher or cutter mixer. However, the Shark Mill eliminates the need for preprocessing. Simply by adding the untreated raw material, it will be finished into the equivalent of a manually grated product.
When processing ginger, the Shark Mill has a maximum throughput of 600 kg per hour. The shape and sharpness of the knife speed up processing while still ensuring contact with the raw material. This reduces costs significantly.
The Shark Mill can also be used in a wide range of dry processes.

GE-A-3

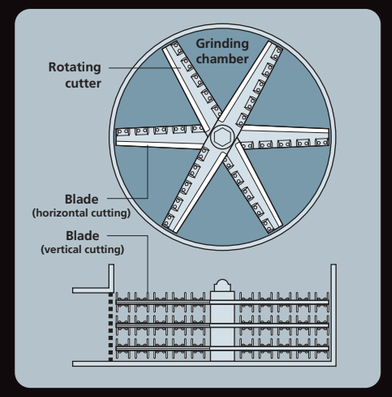
Principle

Strong fibrous raw materials are finely cut by the horizontal cutting blades of the rotary cutter, and by the vertical cutting blades mounted on both the top and bottom. Rotating cutters set at different angles stir the raw material in the grinding chamber to ensure even processing.



Uses airflow to maintain low temperatures.

The cutter shape generates airflow for maintaining low-temperature grinding. For example, the Shark Mill eliminates the problem of grinding heat for dry grinding.

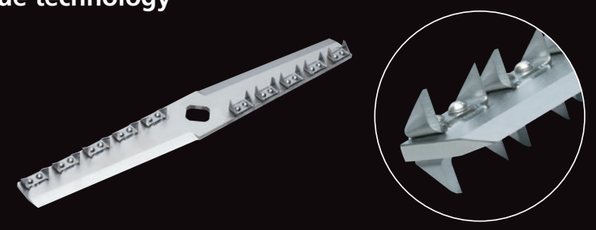


Calculate the number of cutter stages according to raw material characteristics and desired product.

The cutter can be set to 2 stages (2 blades) or 3 stages (3 blades).
In accordance with raw material characteristics, select the optimal setting for processing the desired product.

The knife shape and sharpness are unique technology of GROW ENGINEERING.

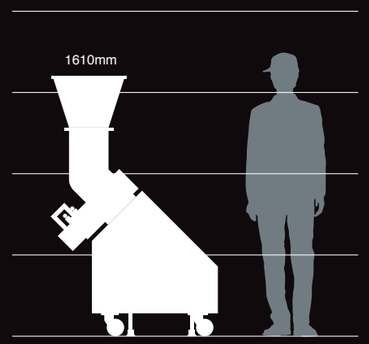
The raw material is cut up and down by horizontal plane of the cutter, which are positioned at the top and bottom of the chamber, and is cut side-to-side by a fine vertical cutter. Over many years of delivery and maintenance, we have refined the design know-how elements including the optimal angles, number, layouts, and sizes of cutters. The result is unique and unparalleled technology.



Specifications

Model	Knife diameter	Number of knives	Processing capacity	Machine dimensions	Power source
GEA-2	ø280mm	2-stage knives	300～500 kg/Hr	520×640×H1460mm	AC200 V 3.7 kW 3-phase
GEA-3	ø440mm	3-stage knives	600～1000 kg/Hr	550×1100×H1610mm	AC200 V 5.5 kW 3-phase

* Processing capacity is a reference value. (The value may vary depending on factors such as the shape of the plate hole, the fluidity of the material, and the size/hardness of the material.)



GEA-3

Example Usage

Dry	Activated carbon felt, film, lingzhi mushroom (traditional herbal medicine), dried lobster, spices, onion skin, shochu lees, lemongrass, dried vegetables, dried sardine, dried bonito flakes, various salts
Wet	Preprocessing of ginger, lettuce, radishes, chili bean sauce, onions, carrots, wakame seawood roots, and juice

Yasai CRUSHER

Dry | Wet | Rough grinding

Grinds vegetables and fruits into pieces measuring 3 to 5 mm.

GECN-350

For grinding vegetables, etc.

The position of the knife and the fixed blade on the interior wall surface make it possible to grind ingredients such as cabbage and lettuce into pieces measuring 3 to 5 mm. The materials can be inserted whole without removing the core.

For preprocessing such as dehydration and extraction.

The Yasai Crusher grinds while breaking down the structure of the raw materials. This makes it ideal for preprocessing by dehydrating and extracting vegetables and fruits.

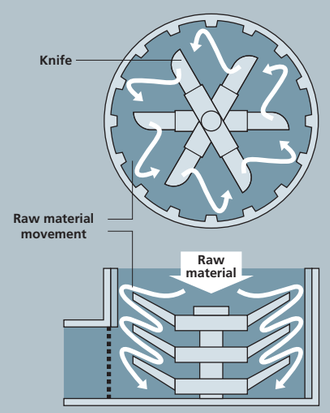
For grinding food waste. Shortens the time for bacterial degradation.

The Yasai Crusher is also suitable for grinding food waste such as leaves, skin, and cores. Since the structure of the raw material is broken down, bacterial activity is promoted and degradation time is shortened compared to grinding with a sharp blade.

* We also produce custom-order models that satisfy grinding needs for other foods and industrial materials.

Principle

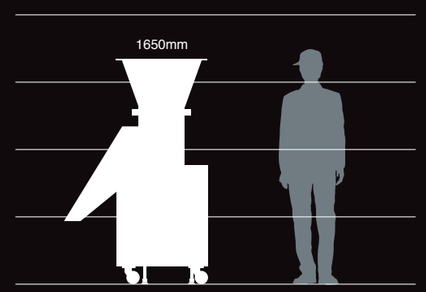
The material cut with the knife is thrown against the wall by centrifugal force. The unevenness of the wall surface causes material to bounce off the wall and be cut again by the knife. This process is repeated to achieve fine grinding.



Specifications

Model	Grinding chamber (diameter)	Number of knives	Processing capacity	Machine dimensions	Power source
GECN-240	ø240mm	4-stage knives	500kg/Hr	500×500×H1330mm	AC200 V 3.7 kW 3-phase
GECN-280	ø280mm	5-stage knives	1000kg/Hr	800×800×H1570mm	AC200 V 11 kW 3-phase
GECN-350	ø350mm	6-stage knives	2000kg/Hr	900×900×H1650mm	AC200 V 15 kW 3-phase

* Processing capacity is a reference value.
(The value will increase or decrease depending on factors such as the knife shape and the size/hardness of the raw material.)



GECN-350

Example Usage

Rough grinding (crushing)	Preprocessing for grinders Preprocessing for dehydration and extraction Grinding of vegetables, grinding of waste products

CHAMBER MILL

Dry | Fine grinding | De-agglomeration | Sorting

Uses airflow to realize uniform fine grinding!
A chamber plate grinder.

- Airflow grinding
- Energy saving
- Low noise
- 10μ and under is possible
- Resists temperature increase
- Easy disassembly and assembly

Enables uniform particles

The opposing R-shape (small chamber = chamber) design of the plates enables grinding via continuous decompression and collision of materials. After grinding, the coarser pieces of material are returned to the grinding cycle by the sorting blades that are attached to the suction section. This ensure uniform particles. The particle size can be easily changed by adjusting the number of sorting blades and the suction.

Low noise

Unlike a hammer mill, there is no liner (gather) on the interior wall of the casing. This reduces noise.

Easy disassembly and assembly

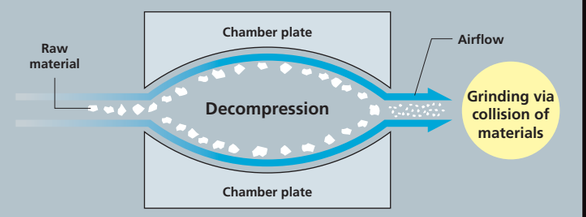
Since the number of parts is small, disassembly and assembly can be performed easily.

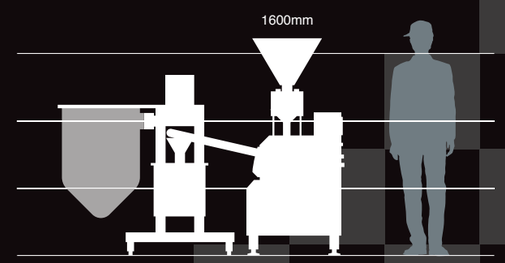
Specifications

RPM	Startup method	Motor	Power source
MAX5400r.p.m	Inverter	Grinder: 3.7 kW Collector: 0.4 kW	Grinder: 200 V Collector: 100 V

Principle

The opposing R-shape (small chamber = chamber) design of the plates enables grinding via continuous decompression and collision of materials.





Example Usage

Activated carbon felt, film, lingzhi mushroom (traditional herbal medicine), dried lobster, spices, onion skin, shochu lees, lemongrass, dried vegetables, dried sardine, dried bonito flakes, various salts

ROTARY CUTTER

Dry | Crushing

Simply feed the raw material into the hopper and crush into the desired particles.

The Rotary Cutter crushes block and plate materials. Noise is extremely low and the hopper (inlet) is equipped with a soundproof structure as a standard feature. Screens for determining particle size are available in a wide range of size from φ2 mm to φ30 mm. The screens can be easily replaced with a single touch.
The Rotary Cutter is suitable for low-temperature processing because it does not generate crushing heat. Depending on the purpose, steel blades, SUS (stainless steel) blades, and carbide blades are also available.
Also easy to clean.

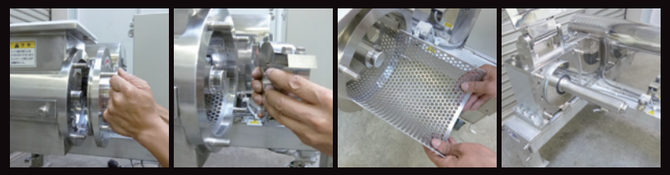
Hygienic

Easy disassembly and cleaning helps maintain hygiene.

Custom stainless steel processing

Custom stainless steel is used in standard specifications for the rotary blade, fixed blade, and screen. The hardness is equivalent to that of carbide and the steel resists chipping.

Easy disassembly and cleaning.



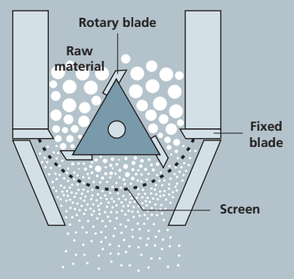
Specifications

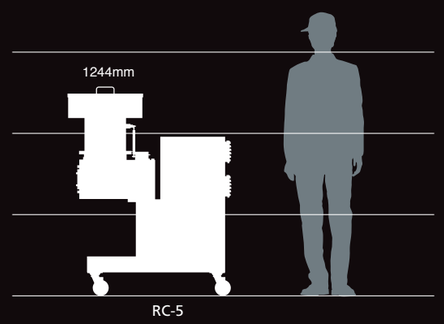
Model	No. of rotary blades	No. of fixed blades	Processing capacity	Machine dimensions	Weight	Power source
RC-3	5	2	20～300kg/Hr	700×540×H1120mm	330kg	AC200 V 2.2 kW 3-phase
RC-5	7	2	50～600kg/Hr	782×970×H1244mm	350kg	AC200 V 3.7 kW 3-phase

* Processing capacity is a reference value.
(The value may vary depending on factors such as the shape of the screen hole, the fluidity of the material, and the size/hardness of the material.)

Principle

The raw material supplied from the hopper is ground by the fixed blade and rotary blade. Ground material which is smaller than the screen hole diameter falls into the receiving box in order from finer pieces.
Ground material larger than the hole diameter is gradually pulverized by the rotary blade and fixed blade until it becomes finer than the hole diameter. In this way, the fineness of grinding is determined by the screen hole diameter.





Example Usage

Food products	Tea, seaweed, cereals, seafood, spices, traditional herbal medicine, dried bonito flakes, cookie and other confectionery; reprocessing of defective products; rock salt and other dried products; fruits, vegetables, seafood, and other foods with water content
Chemicals	Polycarbonate, acrylic, FRP, PP, vinyl chloride, PET resin, fluorine resin, sponges, urethane, etc.
Other	Metals such as aluminum and steel cans; wood, pulp, leather, and carbide; volume reduction of industrial waste and garbage

PERMUTE

Dry | Wet | Fine grinding | De-agglomeration | Sorting

GMP Compliance [**Good Manufacturing Practice** Regulations for manufacturing and quality control of pharmaceuticals. Operated by the Ministry of Health, Labour and Welfare.]

A single machine with different attachments for grinding, mixing, and sorting.

Permute performs even finer grinding (approx. 10 to 20 microns) for raw material preprocessed into pieces measuring about 2 to 3 mm. Fine grinding of dry material is made possible by the impact of the attachment rotating at high speed and the fixed blade on the interior wall.
Permute can fulfill three functions by changing among three types of attachments: fixed hammer, knife, and pin drum.

Atomizer

Specifications

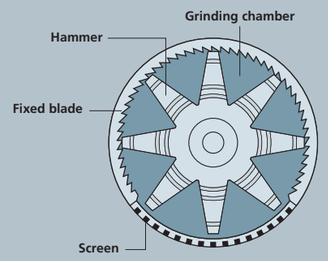
Model	Hammer diameter	Processing capability	RPM	Machine dimensions	Weight	Power source
MP- 5	ø348mm	20～50kg/Hr	500～3600 rpm	700×800×H1100mm	170kg	AC200 V 3.7 kW 4P 3-phase

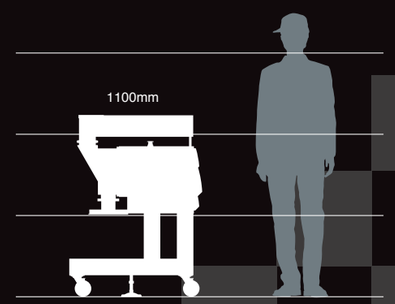
*High-speed motor

* Processing capacity is a reference value.
(The value will increase or decrease depending on factors such as the shape of the screen hole, the fluidity of the material, and the size/hardness of the material.)

Principle

High-speed rotation of the attachment (hammer, knife, or pin drum) causes fine grinding to be performed by the impact of the rotary blade and the interior wall fixed blade. Materials fall out of the chamber in order from pieces which have been ground smaller than the screen hole diameter.





Example Usage

Dried products such as granulated sugar, tea, seaweed, cereals, spices and traditional herbal medicine; various pharmaceuticals, zeolites, films

DISK CUTTER

DC-2 DC-3

Wet | Fine grinding | Mincing

Large processing capacity at low cost!
Simple structure for outstanding hygiene!
Fruits and vegetables inserted into the machine are instantaneously minced into pieces measuring about 3 to 5 mm.
Outstanding price!


DC-2

Superior sharpness

The sharp disk knife cuts fruits and vegetables without damaging the cut surface.

Easy adjustment of cutting size

The fineness of cutting size can be adjusted according to usage by changing the number of disk knives and the number of rotations.

Easy disassembly and cleaning ensures hygiene

Made using stainless steel and aluminum alloy.
This realize lightweight parts which are easy to disassemble and clean.

Superior cost performance

Low cost for the main machine is achieved through large processing capacity.

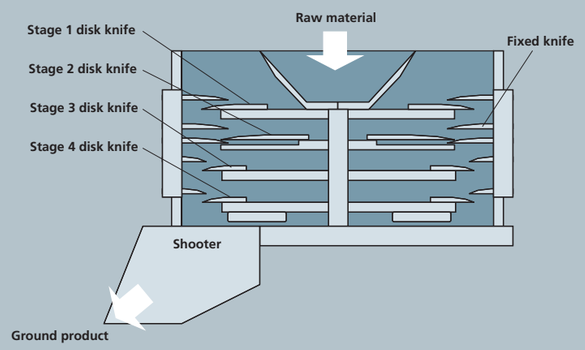
■ Specifications

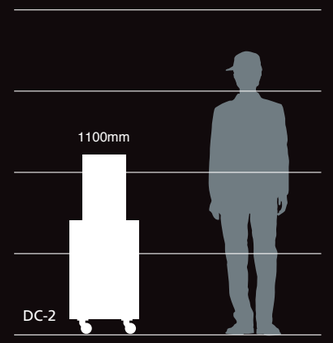
Model	Processing capacity	Machine dimensions	Weight	Power source
DC-2	500～700 kg/Hr	800×420×H1100mm	75kg	AC200 V 1.5 kW 3-phase
DC-3	1000～1500 kg/Hr	950×570×H1100mm	150kg	AC200 V 2.2 kW 3-phase

* Processing capacity is a reference value. (The value will increase or decrease depending on factors such as the shape of the plate hole, the fluidity of the material, and the size/hardness of the material.)

Principle

The raw materials cut by the stage 1 disk knife are thrown against the wall surface by centrifugal force. Then, the raw materials are cut further by the stage 2, stage 3, and stage 4 disk knives, as well as fixed knives attached to the wall surface.





■ Example Usage

Cabbages, onions, carrots, radishes, Chinese cabbage, spinach, kale, Japanese mustard spinach, leeks, garlic, ginger, aloe

Grapefruit, apples, pineapples

ROTARY CUTTER

RC-1

Dry | Wet | Crushing

with inverter panel

Compact rotary cutter designed for tabletop use.

Block or plate material is crushed by a blade rotating at medium speed and a fixed blade on the interior wall. The Rotary Cutter is suitable for low-temperature processing because crushing heat is not easily generated. Ideal for small-scale production such as research and development.

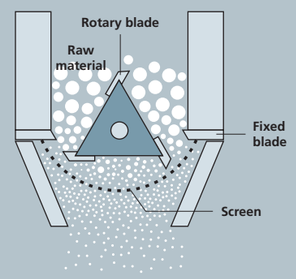
■ Specifications

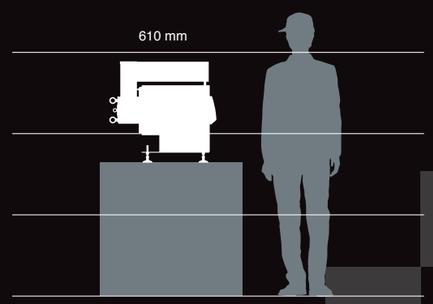
Model	No. of rotary blades	No. of fixed blades	Processing capacity	Machine dimensions	Weight	Power source
RC-1	3	2	5～20 kg／Hr	450×600×H610mm	60kg	AC100V 0.75 kW Single-phase

* Processing capacity is a reference value.
(The value will increase or decrease depending on factors such as the shape of the screen hole, the fluidity of the material, and the size/hardness of the material.)

Principle

The raw material supplied from the hopper is ground by the fixed blade and rotary blade. Ground material which is smaller than the screen hole diameter falls into the receiving box in order from finer pieces.
Ground material larger than the hole diameter is gradually pulverized by the rotary blade and fixed blade until it becomes finer than the hole diameter. In this way, the fineness of grinding is determined by the screen hole diameter.





■ Example Usage

Food products	Tea, seaweed, cereals, seafood, spices, traditional herbal medicine, dried bonito flakes, cookie and other confectionery; reprocessing of defective products; rock salt and other dried products; fruits, vegetables, seafood, and other foods with water content
Chemicals	Polycarbonate, acrylic, FRP, PP, vinyl chloride, PET resin, fluorine resin, sponges, urethane, etc.
Other	Metals such as aluminum and steel cans; wood, pulp, leather, and carbide; volume reduction of industrial waste and garbage