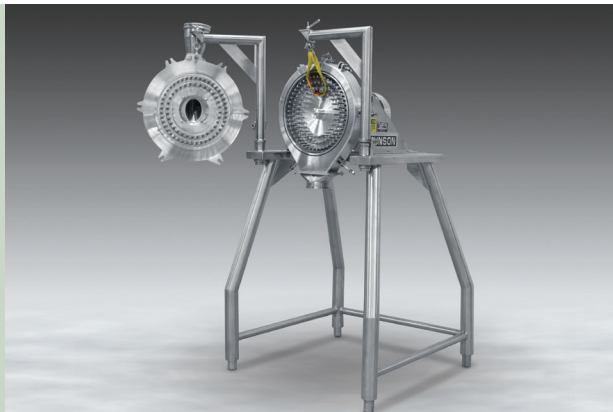


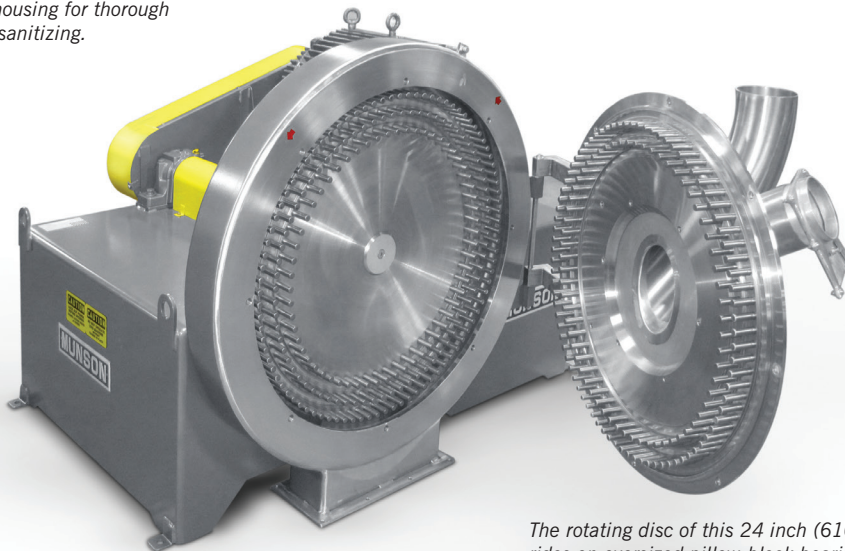
# CENTRIFUGAL IMPACT MILLS (PIN MILLS)

Grind friable materials, reduce flakes and de-lump agglomerates into narrow particle size ranges without the use of screens

*A simple, inexpensive means of grinding, sizing, de-agglomerating and/or homogenizing. Ideal for a broad range of food, chemical, pharmaceutical, nutraceutical, mineral and agricultural products—including pulverizing of insects, eggs and larvae in flour applications—in tight size ranges from coarse to 400 mesh.*



*In addition to a removable outer disc, the inner rotating disc of this pharmaceutical-grade model CIM-18-S316 is also removable, providing full access to both sides of both discs and the mill housing for thorough cleaning and sanitizing.*



*The rotating disc of this 24 inch (610 mm) diameter Pin Mill model CIM-24-SS rides on oversized pillow-block bearings and is driven by a 30 to 60 hp (22 to 45 kw) motor with V-belt/sheave arrangement, delivering high throughput per hp/kw compared with machines employing screens, hammers, knives or rolls.*

Munson's Pin Mill, or "Centrifugal Impact Mill," reduces bulk materials into narrow particle size ranges without the need for screens, hammers, knives or rolls.

Instead, it relies on material impacting hundreds of pins thousands of times as it travels from the center to the periphery of the milling chamber.

The chamber consists of an outer stationary (stator) disc containing circular rows of pins that alternate with concentric rows of pins on the inner rotating (runner) disc.

As metered material is gravity fed through the centrally located inlet of the stator disc, centrifugal force created by the high speed runner disc accelerates material causing particles to alternately impact the stationary pins and rotating pins before reaching the outlet.

To vary the tight range of particle sizes desired, the operator simply adjusts the speed at which the inner disc rotates, from several hundred to more than 5000 rpm depending on mill diameter. This extreme flexibility enables a Munson Pin Mill, with no modifications, to grind friable materials into tight size ranges from coarse particles down to powders of 400 mesh, and to de-lump agglomerated material.

Materials remain cooler than in other types of mills since retention is minimal and air is constantly drawn through the mill chamber.

The Munson Pin Mill features smooth interior surfaces with none of the crevices associated with screens, hammers, knives or rolls, and vertically-oriented outer discs with hinges for greater interior access than horizontal mill housings, allowing total gravity discharge/draining and rapid cleaning/sanitizing.

It is also compact and economical relative to its high capacity, and is virtually maintenance-free.

Available in carbon steel, and stainless steel to industrial or sanitary/pharmaceutical standards, it is offered with discs in diameters of 8, 18, 24 and 34 in. (203, 457, 610 and 864 mm) and motors from 5 to 125 hp (4 to 93 kw) to process <.25 to 5 ft (<7 to 143 liters) of material per minute, depending on application.

## FEATURES

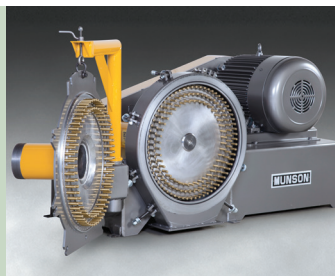
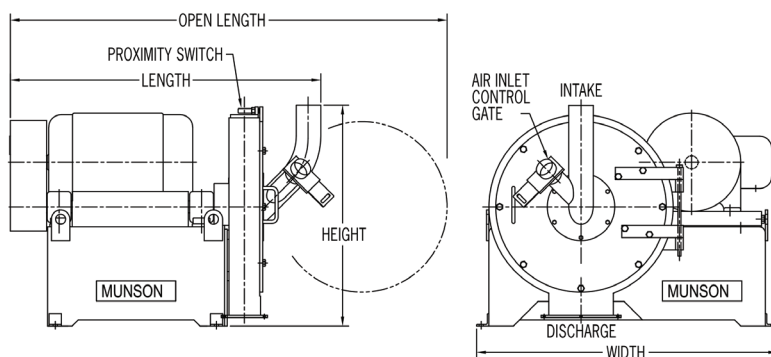
- Grinds friable materials to narrow size ranges; de-agglomerates lumpy materials
- Simple design—only one moving part contacting material
- Air-swept principle of operation keeps material cool
- Easy to clean and sanitize
- Five rows of intermeshing impact pins
- Safety interlocked access door/stator disc hinges open for unrestricted access to all internal material contact surfaces
- Vertical orientation of mill housing offers easier cleaning and sanitizing than horizontal designs
- Precision machined housing and discs
- Easy-flow inlet elbow
- Design efficiency produces high throughput rates per horsepower/kilowatt
- 5 to 125 hp (4 to 93 kw) inverter-capable motors
- Multiple V-Belt and sheave drive arrangements. Direct drive on CIM-18 only.

## APPLICATIONS

- Agricultural Chemicals
- Ceramic Filter Media
- Chalks
- Chemicals (Inorganic)
- Coal
- Dry Clay
- Filter Cake
- Fish Food
- Flour (wheat, rice and others)
- Foods
- Friable Minerals
- Friable Resins/Polymers
- Gelatin
- Grains
- Gypsum
- Herbicides, Pesticides and Fungicides
- Pharmaceuticals
- Pigments
- Polymers
- Powdered and Coarse Sugar
- Powdered Lecithin
- Powdered Metals
- Propanil Flakes
- Resins
- Salt
- Sodium Acetate Flakes
- Spices
- Starch
- Sugar
- Urea/MAP/DAP

## OPTIONS

- Intake hoppers and rotary valves to meter material into mill
- Custom transitions for gravity discharge or pneumatic collection
- Sound deadening enclosures
- Explosion proof motors and electricals
- Removable rotor disc for critical sanitary applications
- Single or double davit arms for swinging stator disc and/or rotor disc away from machine
- Hardened D2, M2, 440 and TiN-coated pins
- Internal welds with minimum 0.25 in. (6.4 mm) radii ground and polished from 80 grit up to 240 grit to prevent material entrapment
- Finishes to FDA, pharmaceutical, and other sanitary or industrial standards: #304 or #316 stainless steel with #2B (standard) or #4 finish, as well as carbon steel
- Variable-speed electronic controls for adjusting rotor speed
- Speed switches
- Stainless steel base frames
- Magnets to prevent tramp metals from entering mill chamber
- Ports for cooling with liquid nitrogen or purging with inert gas
- Filtered collection hoppers (smaller systems)



Vertical orientation of the mill housing allows the stator disc/mill housing to hinge open for rapid cleaning and inspection of all product-contact surfaces. Optional davit arm shown. Removable rotor disc with second davit arm also available (see CIM-18-S316 other side).



This 18 inch (457 mm) diameter Pin Mill model CIM-18-SS provides coarse to fine (400 mesh) grinding of friable materials into controlled particle sizes, as well as de-agglomerating and conditioning of dry solids. A direct drive system reduces the unit's footprint to about half of that required by a belt driven machine.

## SPECIFICATIONS

MODEL	LENGTH IN/MM	WIDTH IN/MM	HEIGHT IN/MM	OPEN LENGTH IN/MM	HP/KW
CIM-8	26/661	17/432	21/534*	33/839	5/4
CIM-18	52/1321	43/1093	27/686	70/1778	15-20/11-15
CIM-24	52/1321	49/1245	39/915	72/1829	30-60/22-45
CIM-34	68/1728	65/1651	49/1245	98/2490	40-125/30-93

\*Overall machine height, not inlet height

### RELATED MUNSON EQUIPMENT:

MIXERS: Rotary Batch (high capacity), Ribbon/Paddle/Plow, Cylindrical Plow, Vee-Cone, Double-Cone, Rotary Continuous, High Intensity, Fluidized Bed

SIZE REDUCTION EQUIPMENT: Screen Classifying Cutters, Knife Cutters, Pin Mills, Attrition Mills, Hammer Mills, Lump Breakers, Shredders

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