

## VERTICAL MEDIA MILLS



### Uniform, ultra-fine milling for all processes

MorehouseCowles media mills provide continuous wet milling for aqueous and various solvent slurries of all viscosities. They efficiently and uniformly mill product to the required particle or agglomerate size. Particle size distribution of less than 1  $\mu\text{m}$  are standard milling requirements. Thousands of MorehouseCowles media mills are performing in dozens of critical milling applications, including:

- Inks
- Greases
- Adhesives
- Pigments & dyestuffs
- Chemicals
- Magnetic Media
- Paper coatings
- Minerals
- Foods
- Ceramic
- Paints & coating
- Pharmaceuticals

The superior processing capabilities of Morehouse-COWLES media mills can readily be seen in the finished product. The smaller, more uniform particle sizes they produce enable smoother product consistency for better quality, enhanced performance and longer shelf life.

For applications that require special materials of construction due to contamination, abrasiveness or other needs, we have assorted materials of construction, such as polyurethane, ceramic and stainless steel. Such flexibility guarantees the proper match of materials to product requirements.

### Selection of proper equipment

With a wide range of standard models, there is a Morehouse-COWLES media mill with the right combination of capabilities for virtually any material or process. But no matter which mill you choose, careful attention must also be paid to selection of the proper feed system and grinding media for optimal results.

The size and type of grinding media are the two most important factors in the quality and quantity of the product processed in a small media mill. The various types and sizes of media available grows daily. Consult our media experts for the proper media requirements. Remember it is the marriage of the media to the product that ultimately determines how well your mills perform.

## Advantages of a Century of Experience

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Morehouse-COWLES quality and dependability

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Exclusive, labor-saving Top Hat Screen System

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Optional, materials of construction for special applications

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Efficient, vertical design with flush-mounted dump valve for quick cleaning and media replacement

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Single-pass processing for most products

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Fully enclosed process chamber

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Integral, variable-flow air diaphragm pump

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Many standard models from 5 to 100 HP assure equipment that matches your processing needs.

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For maximum milling efficiency and consistency, the product should be pre-dispersed with a high-speed dispersion system before media milling. Morehouse-COWLES manufactures the world's leading line of dispersion equipment (see back page of this brochure).

Standard Morehouse-COWLES media mills are equipped with integral, air-diaphragm pumps. Diaphragm pumps are not subject to damage from media in the system, as are gear pumps. Diaphragm pumps offer significant advantages such as easy cleaning, longer life and little required maintenance.

We'll prove how well our equipment performs

It's next to impossible to make a sound equipment choice until you've tested prospective equipment with your product. In our in-house applications test laboratory, our experienced applications engineers will help you choose a milling system that meets the requirements of your process at the lowest possible cost. Field-test units are also available. Consult your Morehouse-COWLES representative for full details.

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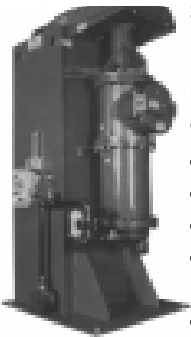


### Sealed, Non-Pressurized Mills

- Five-minute screen changes and inspections with the Top Hat Screen System (see page 3)
- Flush-mounted dump valve for fast media removal and solvent drain (optional)
- Easy-to-maintain stuffing box seal
- Integrally mounted diaphragm pump (other designs optional)

Morehouse-COWLES non-pressurized, small media mills give you the best of both worlds – a simple, low maintenance design with the proven capability to mill to world-class manufacturing standards and a modest cost-per-unit for most applications.

Two separate water jackets provide efficient cooling of the main vessel and head on most models. The product enters the bottom of the vessel through a pipe connection. At the top of the vessel, a stuffing box seals the shaft to 3 psig. The screen area at the front of the mill is completely covered by a cover plate, which is also the connection point for the discharge piping. This design prevents outside air from drying the screen and eliminates solvent emissions.



### Single-Vessel Pressure Mills

Morehouse-COWLES single-vessel pressure mills are the most advanced and versatile small media mills available. Their high performance makes them popular for difficult high-viscosity processing applications. Compare these features:

- Five minute screen changes with the Top Hat Screen System (see page 3)
- Flush mounted dump valve for fast media removal and solvent drain (optional)
- Integrally mounted diaphragm pump (other designs optional)
- Control station includes gauges, sensors, interlocks, start/stop buttons and status lights to ensure correct start-up sequence and to provide automatic shut down in upset conditions
- Double mechanical shaft seal for 50 psig operation with oil recirculation system and heat exchanger



### Multi-Vessel Pressure Mills

Morehouse-COWLES multi-vessel media mills provide the cooling capacity required for repetitive product milling cycles. Morehouse-COWLES multi-vessel mill systems efficiently process all types of magnetic oxides, organic pigments, carbon black, insecticides and hundreds of similar products. Vessels can be pressurized or non-pressurized, and plumbed to mill in series or in parallel. Call Morehouse-COWLES for expert process planning, design assistance or specification.

## Specifications

Model	Sealed, Non-Pressurized Mill					Single-Vessel Pressure Mill				
	5-5A	7-15A	10-25A	12-30A	18-75A	5-5P	7-15P	10-25P	12-30P	18-75P
Gross volume (gal)	1.9	5.5	14.8	29	60	1.9	5.5	16	30	60
Thruput/Capacity (gal/hr)*	2-35	35-75	35-225	35-450	70-900	2-35	35-75	35-225	35-450	70-900
Power (hp)	5	15	30	50	75	5	15	30	50	75
Typical media load	55-60% of Gross Volume									

\*Depends on product characteristics. Milling thrupt capacities are product dependent. Variables, such as viscosity, density, media type and media loading all can affect milling. Consult factory for more defined milling thrupt capabilities.

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### Efficient, continuous milling action

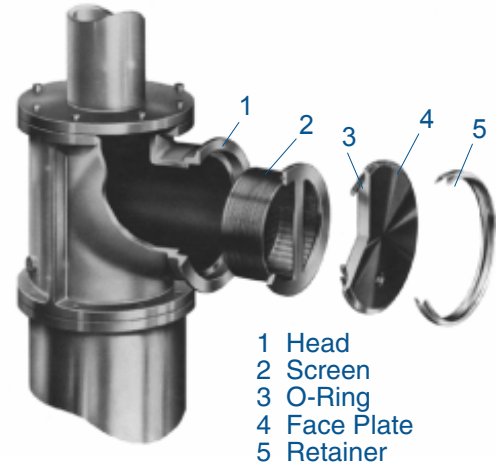
The cylindrical chamber of each Morehouse-COWLES mill is charged with media (grinding beads). The chamber also contains a series of twelve parallel agitator disks mounted on a high-speed shaft. As the shaft turns, energy is transferred from the agitator disks to the media. When product is introduced into the chamber, the motion of the disks and grinding media produces impact and shear forces that efficiently and uniformly deagglomerate particles to a specified size or distribution. To keep the product from getting too hot or cold during milling, the entire mill chamber is jacketed, ensuring proper product temperatures. An integral, variable-flow diaphragm pump moves product through the grinding chamber. Product enters the chamber at the bottom, is ground by the media as it rises through the chamber and exits through the screen at the top. The particle size of the processed product depends on the size and type of media and the flow rate.

### Save hours of maintenance every month

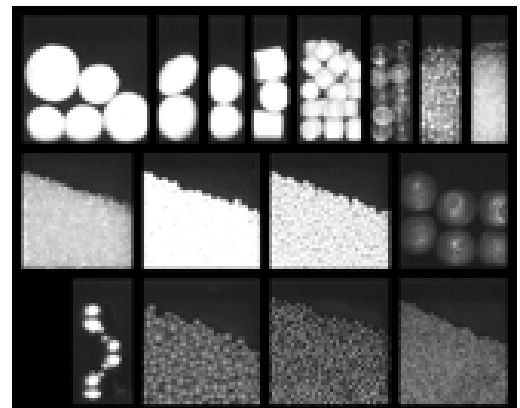
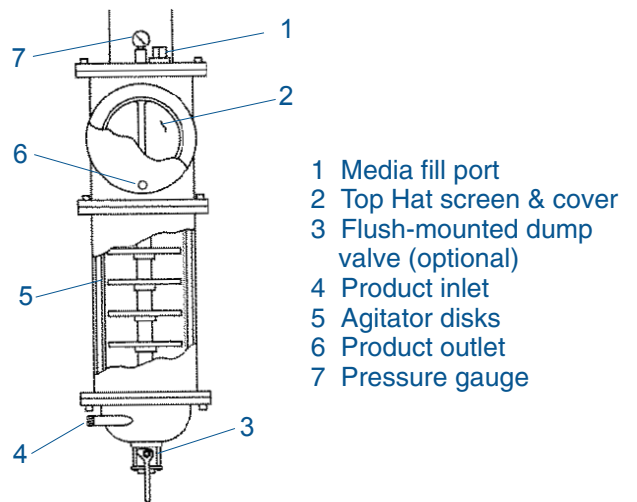
In addition to excellent processing capabilities, all Morehouse-COWLES media mills feature a major advance in easy maintenance: the Top Hat Screen System. With our Top Hat Screen System, screen inspection and cleaning take only 5 minutes. Simply take off the retainer ring and cover, pull out the top-hat-shaped screen, clean and replace. Painstaking bolt removal, gap adjustment and emptying of the chamber are not necessary. Plus, with an optional dump valve flush-mounted on the bottom of the process chamber, the vessel can be easily emptied of product and media through separate connections.

### Grinding media to match your product

After the selection of the proper mill, the next step to guarantee the highest quality of product at the highest thruput is the media. From sand to glass, ferrous to ceramic, you can get the proper media in the quantities required from Morehouse-COWLES.



The Morehouse-COWLESTop Hat Screen System eliminates maintenance problems of rotating-gap type mills



**For Efficient Dispersions, Mixing & Milling, It's Morehouse-COWLES**

At Morehouse-COWLES you'll find more of everything you're looking for in dissolving, milling and mixing equipment. You'll have more equipment choices, from lab models to high volume production units. And since more products have been developed and processed with Morehouse-COWLES dissolvers than any other, you'll also benefit from our extensive applications knowledge. If your process demands more from your dissolving, milling and mixing equipment, make it Morehouse-COWLES.

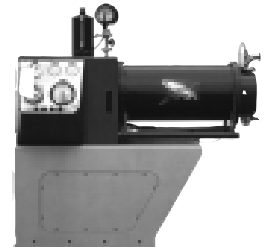


**Tank-Mounted COWLES Dissolvers**

This self-supporting tank-mounted design saves space and can be custom designed for any application. A V-belt drive allows impeller speed selection for optimum processing performance. 1 to 300 HP range.

**Zinger® Horizontal Media Mill**

The unique, patented rotor and chamber design aggressively accelerates media through the slurry and has proven to reduce particle size in significantly less time than the conventional disc mill design.



**Variable Speed Laboratory Dissolvers**

This precision-crafted dissolver allows you to mix, disperse or emulsify at speeds up to 10,000 rpm, making it ideal for testing lab batches as small as 1/2 pint or for making production batches up to 5 gallons.

**Vertical Media Mills**

Simple, reliable and easy to maintain, our vertical media mill is the workhorse of the coatings industry. In standard sizes from 2 to 60 gallons, for process flow rates of 2 to 900 gallons per hour.



**Variable-Speed COWLES Dissolvers**

Our in-stock selection of genuine COWLES models from 1 to 300HP are the standard of the industry. They are equipped with mechanical variable, or inverter variable speed and a hydraulic lift for multiple tank operation.

**Multi-Shaft Mixers and COWLES Dissolvers**

Specify from an unlimited array of mounting, tank, drive, motor, and control options. Vacuum and/or pressure. 1 to 300 HP range; 1/3 gallon to 2000 gallon.



**Direct-Drive COWLES Dissolvers**

Our simple, reliable direct-drive models for new and existing tanks provide the lowest maintenance dissolving system. 5 to 125 HP range for batches up to 1,800 gallon.

**Morehouse Stone Mills**

Features like rotor/stator tolerance adjustment, self-aligning clearance, 316 stainless steel surfaces, and standard cooling jackets have made our stone mills best sellers for over 50 years.



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