



# DUAL SHAFT BASKET MILL CONCEPT and OPERATION



Simplify your milling process with this unique piece of equipment. Standard to common basket mill technology, the needs for additional hard to clean tanks and hoses are eliminated.

## THE BASKET MILL CONCEPT

The basket mill is a submersible milling unit that will achieve particle size reduction without the use of hard-to-clean pumps, hoses, and tanks. The basket mill allows a greater amount of material to pass through the milling chamber more often, resulting in a narrower particle size distribution and stronger pigment strength in a shorter amount of time.

The Myers Mixers Basket Mill is comprised of two shafts: the main shaft is the basket/media agitator shaft, and the second is the batch agitator shaft.

The media agitator shaft has a hub with several agitator pins; the pins agitate the media creating a rolling vortex within the basket. As the material falls into the basket through the opening in the top, it enters into the high-energy zone of the vortex and is pumped through the moving media in a radial flow. As the product passes through the media it is ground by the slipping and rolling action of the media. The material then passes through the screen that separates the media from the batch and washes against the cooling shroud. This helps remove heat build-up that was generated from the product passing through the mill chamber. The material then passes down the side of the cooling shroud and back into the batch where it is agitated and sent back through the milling chamber.

The batch agitator's function is to assist in keeping the batch from settling and to keep the material mixed while it is waiting for its next pass through the milling chamber. The Myers Mixers mill is complete with controls for the mill agitator, comprising of a tachometer, ammeter, s/s/s dial, and a jog push button with a start/stop/speed potentiometer dial for the batch agitator.

ONE TANK PROCESSING

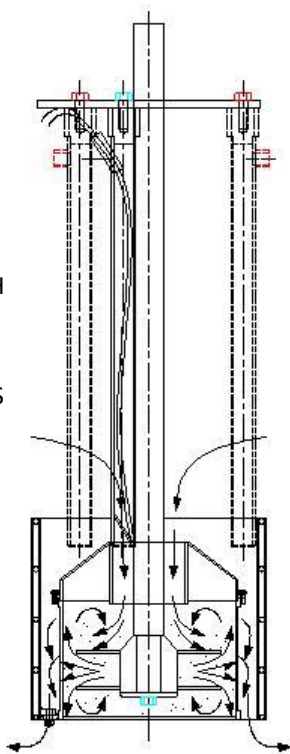
NO PUMPS AND HOSES

BETTER PIGMENT STRENGTH

LOWER SOLVENT EMISSIONS

INCREASED PRODUCTIVITY

FASTER CLEAN UP





The Myers Mixers Dual Shaft Basket Mill offers many advantages over other units on the market. It was designed to eliminate many of the problems of other comparable units while enhancing performance. Listed here are a few high points of the Myers design:

#### THE MYERS MIXERS BASKET MILL ADVANTAGE

**DUAL SHAFT DESIGN** - the dual shaft design allows the operator greater flexibility for a wider range of viscosities and tank sizes. This is achieved by allowing the operator to control the speed of the mill independently from the batch agitation. Simply set the speed for optimum milling and then set the agitator speed for desired batch movement.

**NO MORE PROBLEMATIC FOOT BEARINGS AND SEALS** - the dual shaft design has eliminated foot bearings and seals that are required to run in abrasive environments in order to achieve batch movement on single shaft designs.

**NO HYDRAULIC PACKING** - as most operators of horizontal mills know, if you pump your product too fast through the mill you will pack the media and prevent it from moving freely, which will have an adverse effect on the grind time. The same is true with the basket mill, but unfortunately a single shaft mill requires the material to be pumped through the mill at a rate that is faster than the mill can handle. In addition, force-feeding a basket mill with too much material can also cause media to escape from the top opening.

**REDUCED WEAR ON PARTS** - since you can always operate the Myers mill at the exact speed to get the best production and do not need to over-speed it to get batch movement, you will have less wear on the mill components.

**LESS HEAT** - the Myers mill offers a large heat-exchanging shroud around the mill that removes heat at a rapid rate. In many cases a tank jacket is not required. Other manufacturers have a hard time keeping the batch cool and have had to resort to expensive PLC systems to prevent the mill from putting too much heat in the batch. Unfortunately when you slow down the mill to keep the heat back you also increase your production time.

#### CUSTOMER RESULTS:

##### **Beaded Carbon Black**

- 15 Liter mill
- 500 Liter batch size
- 4.5 Hour mill time
- 10 Micron results

##### **Previous Milling Method:**

- 24 hours on horizontal mill

#### CUSTOMER RESULTS:

##### **Chrome Yellow**

- 15 Liter mill
- 500 Liter batch size
- 1.5 Hour mill time
- 7 Hegman



## OPERATION OF BASKET MILL

Slowly lower the mill into the batch and allow the product to run into the mill by passing through the inlet of the dome. Lowering the mill head into the tank too fast can result in trapped air blowing out of the top of the mill taking media with it. When the top of the mill just passes under the liquid level actuate the 'Jog' push button and allow product to fill the mill, with the mill shaft rotating slowly. This allows any trapped air to release quickly. You will see a burping effect as trapped air escapes.

Lower the mill farther into the batch so that the mill has at least two inches of product above the inlet opening. Start the mill shaft and observe the flow of material into the basket. You should always be able to see a nice even flow of product into the mill chamber as the liquid falls into the basket. Increase the speed of the mill to achieve the desired results. Do not run the mill so fast as to cavitate or produce a wide-open vortex. Once a desired operation speed is reached, try to maintain that speed. Extra speed may not decrease production time, and can cause excessive wear on the mill parts.

Once the mill is running at the appropriate speed, start the batch agitator shaft. Slowly increase the speed of the shaft until a slight movement of the batch is observed and all dead spots have been eliminated. The type of blade used on the batch agitator is typically an axial pumper, but other blades such as disperser and radial pumper blades are also available.

With a Basket Mill, milling is a function of time. The mill chamber is submersed in the product and run until the desired result is achieved. During the milling cycle, the operator should take periodic samples and test for grind and color strength. When the desired results are achieved, reduce the speed of the mill shaft and shut down the batch agitator shaft.



### MEDIA SELECTION

For best results, use dense, high quality grinding media, which will offer high dispersion efficiency and long media life. Some of the preferred media materials are zirconium silicate, and stabilized zirconium oxide.

Lower quality glass or ceramic media can be broken down or fractured easily by the high energy of the rotating pegs on the mill chamber agitator. The broken or fractured media can cause blockage of the screen slots of the mill chamber and reduce product flow through the screen as well as allow media to back up out of the chamber inlet.

For mills with a screen slot size of 0.5 mm we recommend a media size range of 1.2 to 1.7 mm. For a screen slot size of 0.8 mm we recommend a media size of 1.4 to 2.0 mm.

### MEDIA LOADING

Media is loaded through the upper draft tube at the top of the mill by using a funnel or pitcher. The media size and volume are the most important factors in achieving an optimum grinding performance. During heavy use check media daily. The average loading volume is between 75-80% of the holding volume of the mill chamber. This level is typically one inch from the top of the slotted screen. Always be sure that the media that you are using is free of dirt and broken pieces of media, as these items will clog the screen and cause the media to back out of the mill into the batch.

When filling the chamber with a new media charge, it is highly recommended that the media be conditioned by running the mill in a container of resin, or solvent-resin blend for approximately 30 minutes. When finished, empty the charge and run the beads through a screen. This removes any fractured beads or fragments from the media charge.

### BASKET MILL SIZE CHART

Model No.	Basket Size	Batch Size
LM850A-3-2	1 Liter	19-26 Liters 5-7 Gal
M850E-10-5	4 Liters	95-190 Liters 25-50 Gal
M850E-30-10	15 Liters	300-365 Liters 80-150 Gal
M850E-50-20	27 Liters	600-950 Liters 160-250 Gal
M850E-60-30	38 Liters	800-1500 Liters 210-400 Gal

Custom sizes and configurations are available. Please inquire for details.