

Laboratory Mixers for Industrial Mixing Research & Development



LABORATORY MIXERS

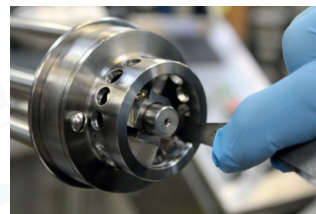
Why are the right laboratory mixers important?

Laboratory R & D is a vital step prior to bulk processing and ensures :-

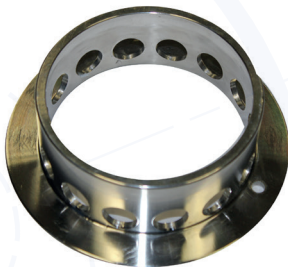
- Product meets customer requirements
- The formulation is suitable for bulk production
- Product has consistent properties regardless of batch size
- Production cost is consistent and predictable

Leading to clear commercial advantages:-

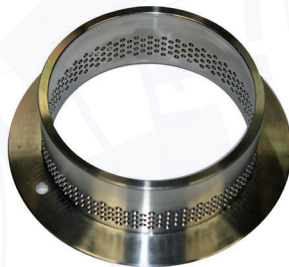
- Flexible batch sizes
- Maximise availability, minimise inventory
- Speed to market with new products
- Rapid up-scaling of new products
- Process validation



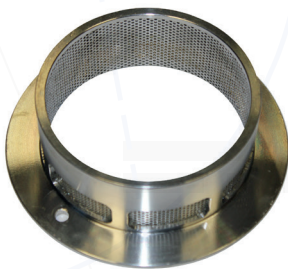
Shear Stator Options



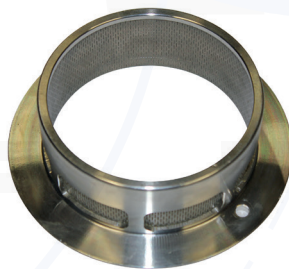
General Purpose Shear Stator



Emulsification Shear Stator



1.5mm Shear Stator



500 micron Shear Stator

What are the key features of Greaves Laboratory mixers?

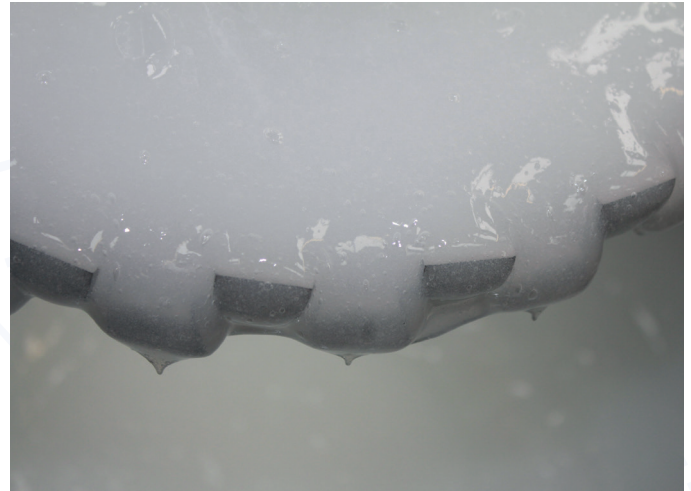
- Scalable to Bulk, delivering same process conditions as corresponding full scale Greaves mixers
- Sector leading rotor / stator gap tolerances, maximising shear rate and optimising bulk cycle times
- Available with Full Vacuum, Pressure, Thermal and Agitation options to emulate corresponding production systems
- Available in a range of mixing volumes from 0.5L to 100L Pilot systems
- Alternate head /baffle/impeller options to optimise flow and shear
- CE safety switchgear and electric lift options
- ATEX variants to Zone 0 & Zone 20 IIC T4

LABORATORY HIGH SPEED DISPERSERS

High Speed Dispersers

Laboratory High Speed Dispersers are commonly used to wet out powders into liquid bases. The high speed serrated impeller creates a vortex which ensures powders are rapidly and evenly dispersed without agglomeration.

By determining the optimum serrated impeller / vessel ratio in the laboratory product, formulations can be confidently upscaled to bulk without further adjustment.



Laboratory / Pilot Scale Disperser	kW	Speed (RPM)	Capacity** (Litres)
ST-A	0.18	6000	0.5-5
ST-B	0.18	6000	1-10
ST-C	0.25	6000	2-15
ST-D	0.75	6000	3-25

**The Capacities shown indicate the maximum batch quantity at the maximum viscosity (30,000cps) and minimum viscosities.

Benefits:

- Laboratory formulations reliably up-scale to bulk production
- Easy cleaning, hygienic construction
- Low wear, low maintenance
- High Viscosity Capability
- Variable Speed with digital display
- Viscosity monitor (amps display)
- CE compliant safety system

Options:

- Interchangeable serrated impeller blades
- Product temperature display
- Manual or Electric lift
- Quick release interchangeable mixer tools
- Vacuum and pressure vessels
- Thermal vessel jackets
- Heated baseplates
- High Abrasive Variants
- Pneumatic drive
- ATEX rated

Joshua Greaves & Sons Ltd.

Atlas Engineering Works, Garden Street, Ramsbottom, BL0 9BG

Tel: 01706 82 4191 | Fax: 01706 82 3000 | Email: info@greaves.co.uk | Web: www.greaves.co.uk

Version-V-401-LAB-250516

LABORATORY HIGH SHEAR MIXERS

High Shear Mixers

These laboratory mixer types follow the same principles as their full scale counterparts. The combination of high speed and close rotor / stator tolerance creates a high energy zone where liquid / liquid and liquid / powder mixtures are rapidly homogenised.

The mixer head geometry, vessel capacity and rotor speed are designed to create the same mixing and shear conditions as the corresponding full scale installation. This ensures that formulations created at Lab scale can be applied in production without adjustment.



Top Entry Model	kW	Speed (RPM)	Capacity** (Litres)
GM-A	0.18	6000	0.5-5
GM-B	0.18	6000	1-10
GM-C	0.25	6000	2-15
GM-D	0.75	6000	3-25
GM-E	2.2	4500	30-200

**The Capacities shown indicate the maximum batch quantity at the maximum viscosity (30,000cps) and minimum viscosities.

Benefits:

- Laboratory formulations reliably upscale to bulk production
- Easy cleaning, hygienic construction
- Low wear, low maintenance
- High Viscosity Capability
- Variable Speed with digital display
- Viscosity monitor (amps display)
- CE compliant safety system

Options:

- Interchangeable mixer heads
- Product temperature display
- Manual or Electric lift
- Quick release interchangeable mixer tools
- Vacuum and pressure vessels
- Thermal vessel jackets
- Heated baseplates
- High Abrasive Variants
- Pneumatic drive
- ATEX rated

OPTISHEAR & CUSTOM LABORATORY MIXERS

OptiShear

OptiShear is Greaves most capable and flexible laboratory mixing machine. It is designed to provide scalable laboratory mixing for Greaves largest most demanding full scale mixing systems.

Benefits:

- Laboratory formulations upscale to maximum bulk shear rate $60,000 \text{ S}^{-1}$
- Ultra High Viscosity mixing
- Variable speed with digital speed display
- Programmable timer (Manual / Auto mode)
- Hygienic Stainless Steel construction with enclosed drive and integral control panel
- Hygienic Fully enclosed electric lift
- Quick release easy-to-clean mixer Disperser/ High Shear mixer heads
- CE compliant safety system



Top Entry Model	kW	Speed (RPM)	Capacity** (Litres)
OptiShear GM/ST	1.1	10,000	1-25

**The Capacities shown indicate the maximum batch quantity at the maximum viscosity (30,000cps) and minimum viscosities.

Options:

- Interchangeable mixer heads:
 - Serrated impeller blades 1 to 25L capacity
 - High shear heads 1 to 25L capacity
- Product temperature display
- Vacuum and pressure vessels
- Heated baseplates

Custom Laboratory Mixing Solutions:

For particularly challenging process requirements, Greaves offers custom laboratory mixing solutions.

These include :-

- Ultra-high viscosity
- Shear sensitive products
- Operator constraints
- High risk processes





FLUID PROCESSING SOLUTIONS



Joshua Greaves & Sons Ltd.

Atlas Engineering Works, Garden Street, Ramsbottom, BL0 9BG
Tel: 01706 82 4191 | Fax: 01706 82 3000 | Email: info@greaves.co.uk | Web: www.greaves.co.uk

Version-V-401-LAB-250516