

Littleford

laboratory mixers

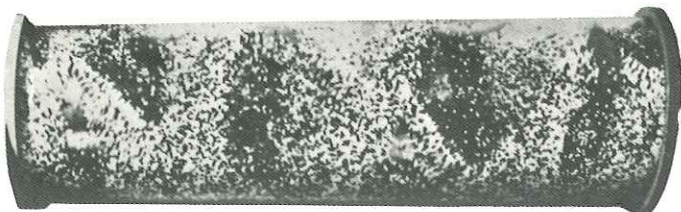


Littleford Laboratory Mixers...

for research and development work in such fields as plastics, chemicals, foods, pharmaceuticals and cosmetics.

Littleford has designed and engineered an advanced line of mixers and mixing systems that combine degrees of speed, precision, efficiency and versatility not previously obtainable in a single mixing unit. Whether for batch or continuous material processing, Littleford equipment enables the user to have complete analytical control over the mixing operation, eliminating guesswork in preparing products and formulations.

Fluidized Bed Mixing Action



The key to success in Littleford mixers is the unique action created by the rotation of the plow-shaped mixing elements that produce intense, but gentle intermingling of the materials of the mix, creating a mechanically fluidized bed. The mixing elements are arranged at intervals on the mixer shaft and their size, number, arrangement, geometric shape and peripheral speed are designed to force the product into appropriate components of axial and radial motion, creating the mechanically fluidized bed mixing action.

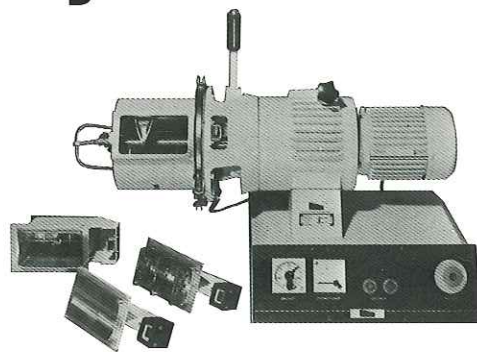
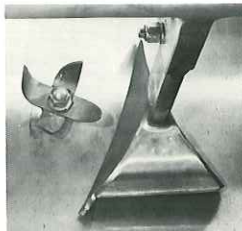
Rubbing and Grinding Plates

The Models M-5-G and M-20-G mixers are equipped with rubbing and grinding plates attached to the access doors. These plates are grid devices which impart shear into the product as the mixing plows pass between them and force the materials of the mix through their openings.



Independently Driven Chopper

An independently driven chopper is available on the Model FM-50 and larger units and is mounted in the side wall of the mixer to break up and control the size of agglomerates through a high speed shearing action. The high speed chopper not only enhances the basic mixing action, but also disperses trace ingredients throughout the batch. It can also be used to granulate and aids in the control of granule size.



Model M-5-G Laboratory Mixer

The M-5-G is an excellent bench type mixer for small batch testing and the gathering of processing data. The vessel is charged through a rectangular port located on the top of the drum. The unit can also be charged through an accessory port cover with a built-in charging port extension safety screen, filter cap, and liquid addition capability. Small amounts of material may easily be added through the charging port while the mixer is running.

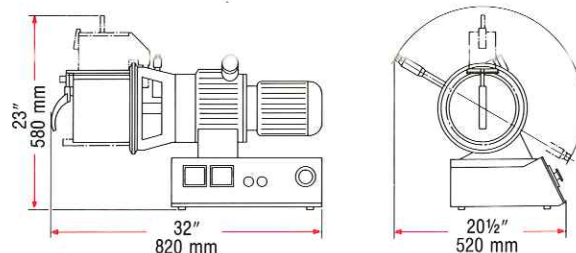
Discharge of the mixer is accomplished by rotating the mixing drum 180 degrees downward on its swivel base. For simplicity of cleaning, the mixer drum is detached by removing a quick release clamp. The shaft and plows are easily removed for cleaning by removing one screw.

Standard Equipment

The M-5-G is equipped with a 1/2 HP drive motor • Type 316 Stainless Steel (polished to a #120 grit finish) product contact surfaces • sanitary construction • mechanical variable speed drive • on/off pushbutton switches • stuffing box type packing • plow-shaped mixing elements • key locking switch • safety limit switch • emergency cut-off switch • ammeter • timer operable in four modes • standard port cover • contour port cover equipped with rubbing and grinding plates • port cover with charging extension • liquid addition capability

Optional Equipment

Optional equipment includes jacketed drum • hard faced mixing elements • port cover with a connection for vacuum operation



Model M-5-G Mixer Specifications

Total Capacity*			Motor	Variable Speed (standard)	Elec. Power Required	Jacket Press Rating (optional)	Approx. Weight	
Liters	Gallons	Cu. Ft.					Lbs.	Kilos
5	1.3	.18	1/2 hp	0-380 RPM	230/460 3 phase 60 Hz	75 psi	110	49.9

*Working capacity depends on process and is normally between 50 and 70% of the total capacity.

Littleford Testing Program

Littleford Bros., Inc. maintains a modern, well-equipped Technical Center in Florence, Kentucky, for mixer evaluation and initial development by customers and prospects. We welcome you to "Put Us to the Test".

We are confident that you will find the data compiled during the test program to be valuable and useful in assessing Littleford processing equipment for your application. We look forward to assisting you during the test program.

Included in the Technical Center's equipment are:

Mixers & Processing Equipment

Model M-5-G: Lab mixer, 0.1-0.15 cu. ft. working capacity

Model W-10: High-intensity lab mixer, 0.2 cu. ft. working capacity

Model DVT-130: Pressurized/vacuum reactor, 3 cu. ft. working capacity

Model FM-130D: Batch mixing/processing unit, 3 cu. ft. working capacity

Model FM-130D (Sanitary): Batch mixing/processing unit, 3 cu. ft. working capacity

Model W-180/K-300 PVC Compounding System:
Model W-180 mixer has 3 cu. ft. working capacity and the K-300 cooler has 6 cu. ft. working capacity

Model MGT-125 (Sanitary): Pharmaceutical mixer/granulator, 3.5 cu. ft. working capacity

Model KM-150: Continuous mixing/processing unit, 3.5 cu. ft. working capacity

Auxiliary Equipment

Recirculating Chilled Water System • Steam Service
Air Compressor • Recirculating Hot Water System
Recirculating Hot Oil System • Hot Air Flowing System
Water Seal Vacuum Pumps • Liquid Spray Systems
Recording Wattmeters
15 HP Adjustable Frequency AC Motor Speed Controller
Volumetric Feeders and Liquid Addition Systems

Scales and Balances

Triple beam Balance, 0-2610 grams x .01 grams.
Platform Scale 0-270# x 1/4 oz.
Platform Scale 0-100# x 1 oz.
Platform Scale 0-1000#'s x 1/4#'s
Platform Scale (Digital) 800# x 0.2#.
Platform Bench Scale (Digital) 80# x 0.02#.

Heaters

Electric Pail/Drum Strip Heaters • Electric Hot Plate

Instruments

Moisture Determining Balance • Microscope, Stereo
Fineness Gauge, Hegman • Rotap Sieve Shaker
Pyrometer • Thermometers (Celsius and Fahrenheit)
pH Meter • Brookfield Viscometer

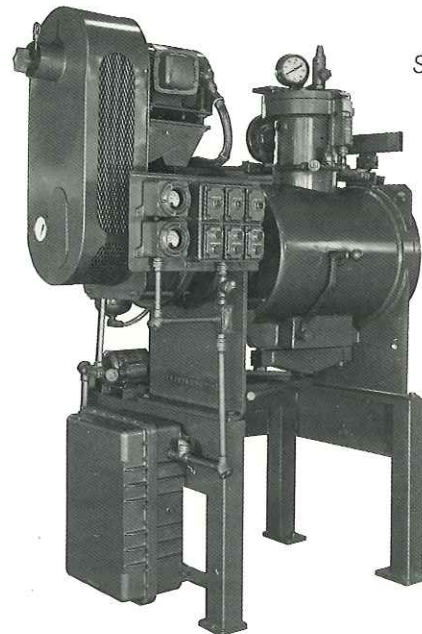
Various Flow and Temperature Gauges on Recirculating Media Lines

Trial Demonstration Program

Our Trial Demonstration Program offers potential customers in the process industry a unique opportunity to test a Littleford mixer in their own manufacturing environment. Littleford mixers, available through this program, are suitable for use in various applications and can be used to determine scale-up information for manufacturing capabilities of larger production units.

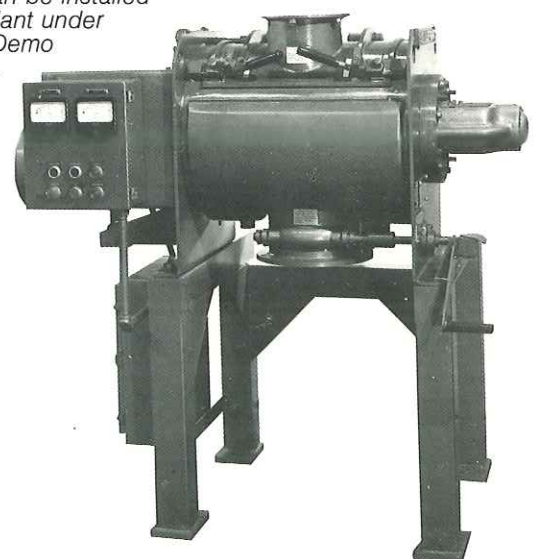
Through the In-Plant Trial Demonstration Program, you are able to determine the processing advantages and efficiencies of the Littleford mixer in your own plant without large commitments of research and developmental funds.

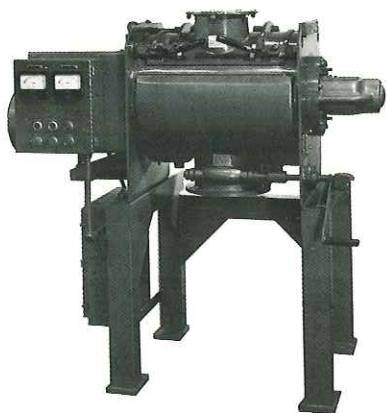
Your Littleford representative can arrange for the rental of a trial demonstration mixer for testing in your own plant.



Model DVT-130 (1Z) Polyphase® Reactor Systems are available for test and/or pilot work in your plant under Littleford's unique "In-Plant Trial Demonstration Plan."

Model FM-130D (1Z) Batch Mixers can be installed in your plant under the Trial Demo Plan, too.





Model FM-130 Laboratory Mixer

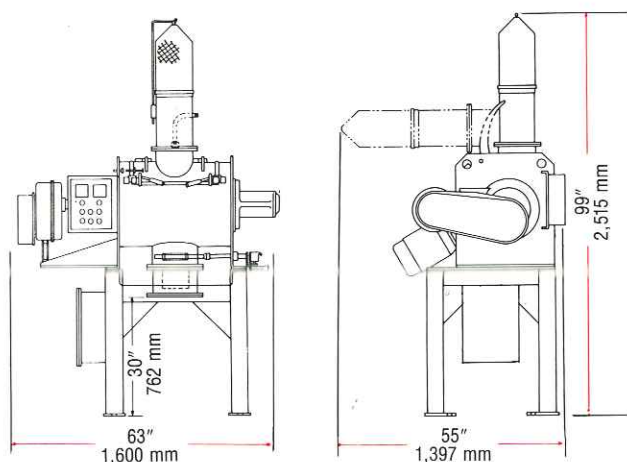
The FM-130 batch mixer is especially designed for laboratory, pilot plant and small scale production usage. This mixer features an access door located on the top of the mixer for ease of charging and cleaning. The FM-130 access door comes equipped with an electro-mechanical safety interlock device to prevent mixer start-up with the access door open as well as safety screens and extensions on the vent and discharge to prevent operator access to the mixer interior.

Standard Equipment

The FM-130 is available with a 5 HP, 7.5 HP, 10 HP or 15 HP, TEFC, drive motor • removable plow-shaped mixing elements • carbon steel construction • electro-mechanical safety interlock device • safety screens and extensions • NEMA 12 electrics • motor starters • start-stop pushbuttons • machine wiring • main drive ammeter • safety limit switches.

Optional Equipment

Optional equipment includes Type 304 and 316 Stainless Steel construction • an independently operated chopper (5 or 10 HP) • mounting base with 30" discharge height • 75 psi jacket • ammeters for main and chopper drives • sanitary construction • tower-mounted or chopper-mounted liquid injector.

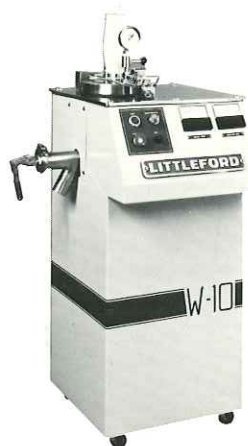


Model FM-130 Mixer Specifications

Total Capacity*			Main Drive Motor	Speed Range Variable (optional)	Elec. Power Required	Jacket Press Rating	Approx. Weight	
Liters	Gallon	Cu. Ft.					Lbs.	Kilos
130	34	4.6	5 HP 7.5 HP, 10 HP, 15 HP	75 to 175 RPM	230/460 3 phase 60 Hz	75 psi	1,900	861.8

*Working capacity depends on process and is normally between 50 and 70% of the total capacity.

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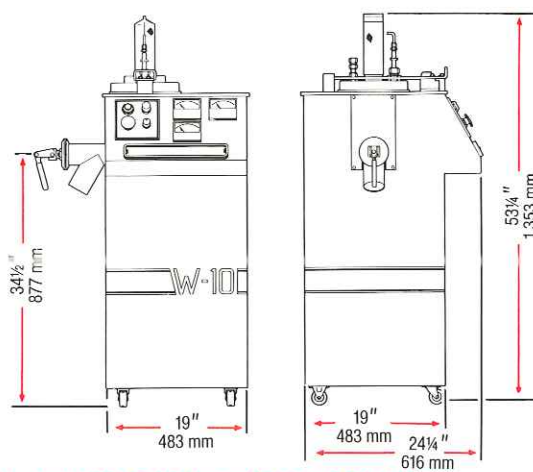


Model W-10 High Intensity Laboratory Mixer

The Model W-10 is a compact, high-intensity mixer that is designed for applications that require a high amount of mechanical shear to be imparted into the material of the mix. The mixing action of this vertical bowl unit is accomplished by the high speed rotation of the impellers which consist of a horizontal plow or initiator setting the mix in motion in conjunction with an angular plow or accelerator which imparts the shear into the mix. The high speed rotation of the mixing impellers creates a high shear pumping vortex mixing action which keeps the mix in a combined rotary, horizontal, and vertical movement, resulting in fast homogenization. The mixing vortex is controlled by a deflector vane that enters the mix from the lid and by the rotating speed of the impellers. The deflector vane is equipped with a thermocouple for measuring product temperature and an injection tube for liquid addition capability through the vane. It discharges through a manually-operated plug valve at the bottom front of the unit.

Standard Equipment

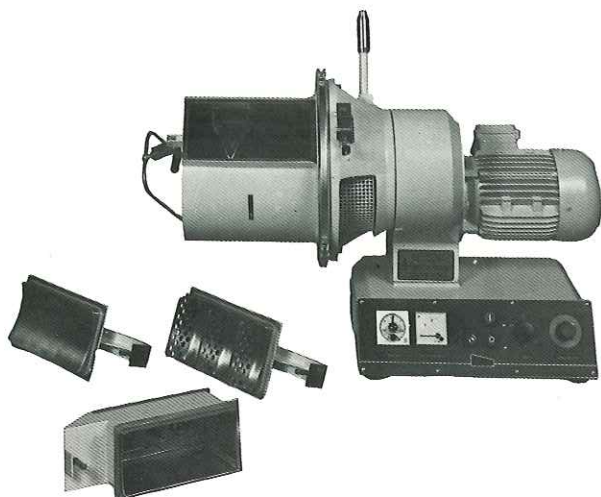
The W-10 is equipped with a 3 HP drive motor • removable plow-shaped mixing elements • ammeter • tachometer • safety limit switch • deflector vane • 75 psi jacket • variable speed drive • base mounted on casters



Model W-10 Mixer Specifications

Total Capacity*			Motor	Speed Range Variable	Elec. Power Required	Jacket Press Rating	Approx. Weight	
Liters	Gallons	Cu. Ft.					Lbs.	Kilos
10	3.0	.4	3 HP	800-3,200 RPM	230/460 3 phase 60 Hz	75 psi	400	181.4

*Working capacity depends on process and is normally between 50 and 70% of the total capacity.



Model M-20-G Laboratory Mixer

The M-20-G is a versatile mixer which allows for the testing of larger batches than the M-5-G and for scale up information. This bench type mixer is charged in the same manner as the Model M-5-G.

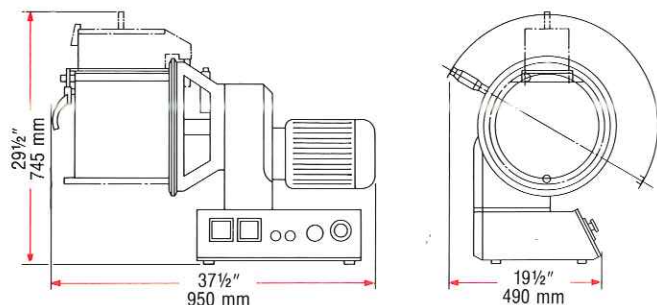
Discharge of the mixer is accomplished by rotating the mixing drum 180 degrees downward on its swivel base. For simplicity of cleaning, the mixer drum is detached by removing a quick release clamp. The shaft and plows are easily removed for cleaning by removing one screw.

Standard Equipment

The M-20-G is equipped with a 2 HP drive motor • Type 316 Stainless Steel (polished to a #120 grit finish) product contact surfaces • sanitary construction • mechanical variable speed drive • on/off pushbutton switches • stuffing box type packing • plow-shaped mixing elements • key locking switch • safety limit switch • emergency cut-off switch • ammeter • timer operable in four modes • standard port cover • contour port cover equipped with rubbing and grinding plates • port cover with charging extension • liquid addition capability

Optional Equipment

Optional equipment includes jacketed drum • hard faced mixing elements • port cover with a connection for vacuum operation



Model M-20-G Mixer Specifications

Total Capacity*				Variable Speed (optional)	Elec. Power Required	Jacket Press Rating	Approx. Weight
Liters	Gals.	Cu. Ft.	Motor				
20	5.2	.71	2 HP 230 RPM	40-230 RPM	230/460 3 phase 60 Hz	75 psi	240 108.9

*Working capacity depends on process and is normally between 50 and 70% of the total capacity.



Model FM-50 Laboratory Mixer

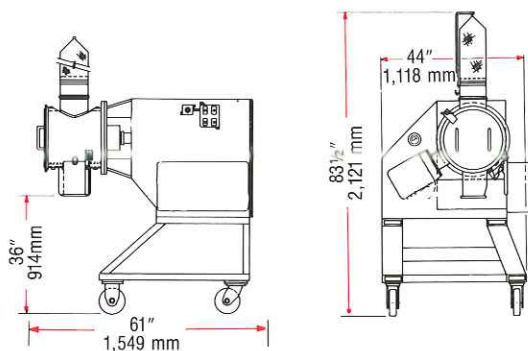
The FM-50 is a large laboratory unit for the batch testing of materials and the assimilation of scale up data for production units. It is charged through a combination charging/vent port. A quick release clamp allows for fast removal and replacement of the vent for charging of the mixer. Discharge is through a port equipped with manually-operated contour door, located on the bottom of the mixer.

Standard Equipment

The FM-50 is equipped with a 5 HP, TEFC, drive motor • removable plow-shaped mixing elements • Type 304 Stainless Steel (polished to a #120 grit finish) product contact surfaces • removable mixer head via an expander ring clamp • NEMA 12 electrics • motor starters • start-stop pushbuttons • machine wiring • main drive ammeter • safety limit switches • safety screens on charge and discharge ports.

Optional Equipment

Optional equipment includes an independently operated chopper (5 or 10 HP) • 24" high base mounted on casters • 75 psi jacket • vacuum construction • variable speed drive • feed hopper • tower-mounted liquid injector • air seals for main shaft and chopper shaft



Model FM-50 Mixer Specifications

Total Capacity*				Speed Range Variable	Elec. Power Required	Jacket Press Rating (optional)	Approx. Weight
Liters	Gals.	Cu. Ft.	Motor				
50	13	1.8	5 HP 180 RPM TEFC	40-240 RPM	230/460 3 phase 60 Hz	75 psi	1800 816.5

*Working capacity depends on process and is normally between 50 and 70% of the total capacity.

Manufacturing at Littleford

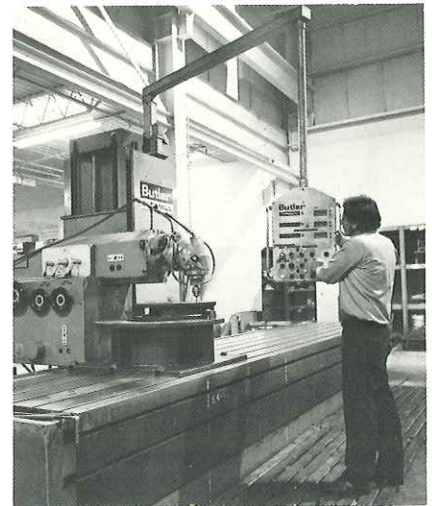
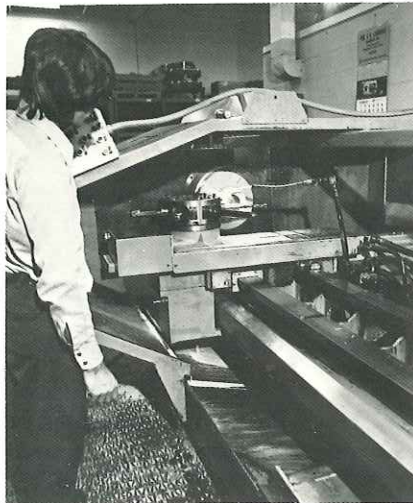
The reputation Littleford has earned in the design and engineering of advanced mixers and mixing systems is carried through in the manufacturing aspects. Their modern plant employs the latest in production technology, such as laser beam boring guidance and numerically controlled machine tools.

The result of Littleford's manufacturing care and tight quality control standards is a product that will meet your requirements...efficiently, precisely and economically.

A Century of Service

Littleford Bros., Inc. has produced quality products for industry since 1882. This heritage of engineering excellence, manufacturing skill, and customer service has made Littleford a most trusted name among industrial suppliers.

Littleford looks forward to being able to put its experience, capability, and mixers of exceptional value to work for you. Littleford...a name you need to know.



Littleford Plant and Testing Center located minutes from Greater Cincinnati Airport in Florence, Kentucky

Littleford equipment shown herein is patented and manufactured under exclusive license of Gebrüder Lodige G.M.B.H.

Paula Shaw
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Dimensions, weights, production capacities and other specifics cited in this literature are illustrative only and may be subject to many variables. The only warranty applicable is our standard written warranty. We make no other warranty, expressed or implied.

Littleford

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