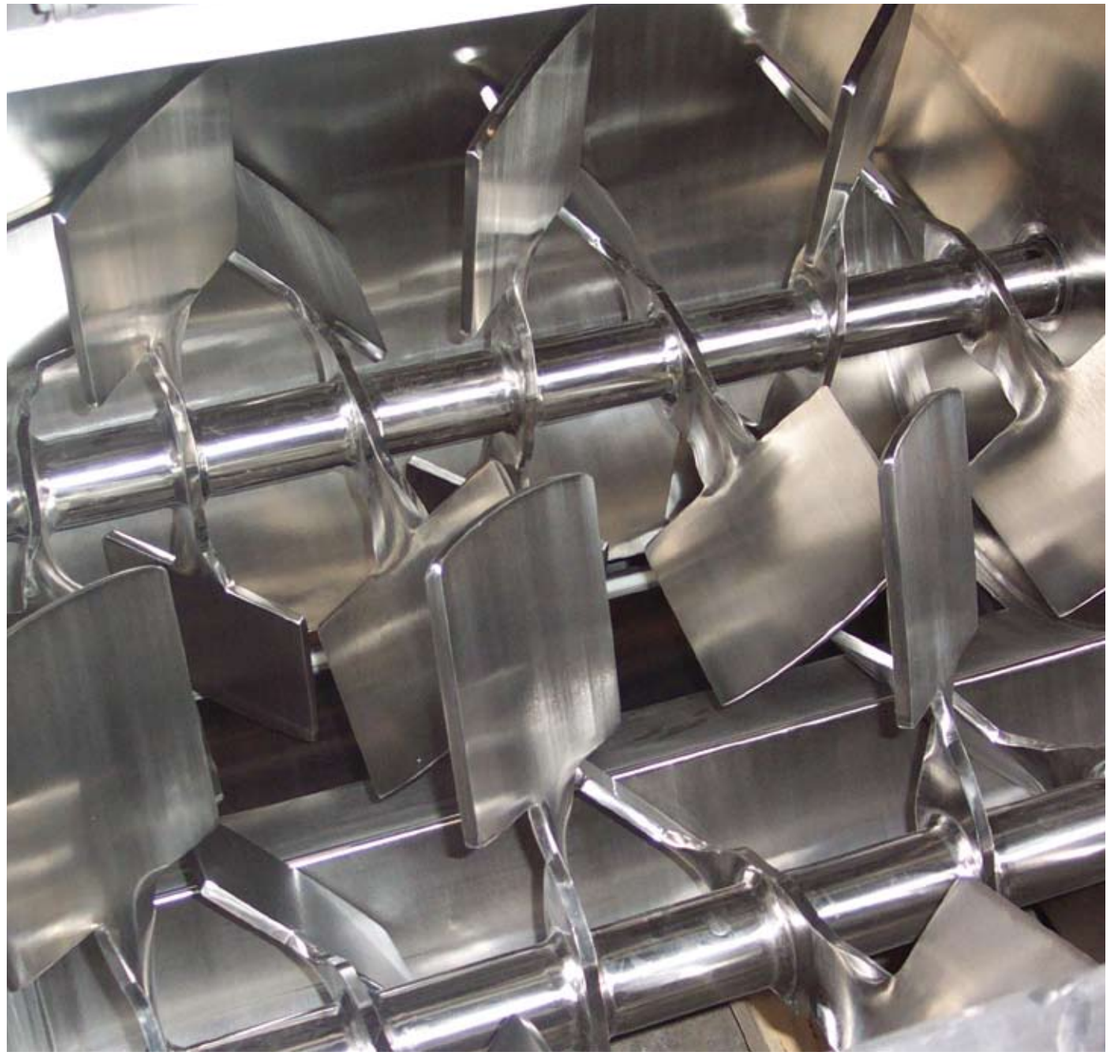
Innovative Mixing Technology

AMERICAN PROCESS SYSTEMS

OPTIMA II BLEND™

FLUIDIZED ZONE MIXERS

- *Twin-Shaft* Fluidizing Zone Mixer
- Highest Particle Movement
- Lowest CV Values
- Shortest Mix Times
- Complete & Thorough Discharge
- Superior Agglomeration Capabilities



The Fluidized Zone Mixer: Overlapping and counter rotating twin shaft paddle assemblies. Shown with full length bomb bay doors.

The Fluidized Zone Mixer In Action

Start

5 Seconds

10 Seconds

Time interval photos of blending flour, pepper and paprika. Notice the fluidized zone between the rotors in the 5 second interval photo.

Fluidized Zone Mixer

Fast, Gentle & Cost Efficient

Fluidized Zone Mixers are capable of preparing a homogenous mix independent of particle size, shape or density. The unique agitation ensures rapid yet gentle blending, short mixing cycles, low operating costs, minimal product degradation and one of the highest production capacities of any mixer type.

Design Features

The mixers consist of twin shaft, overlapping paddle assemblies which are counter rotating at comparatively low rotor speeds drawing material from each rotor drum and lifting the ingredients up and between the rotors. This creates a fluidized zone where particles can freely transpose, thereby eliminating segregation.

Micro-minors of 1 ppm are mixed regardless of where they are added into the mixer. Shear is very low or non-existent and therefore no heat is generated. As a result extremely fragile ingredients such as flakes or whole coffee beans can be blended with minimal degradation.

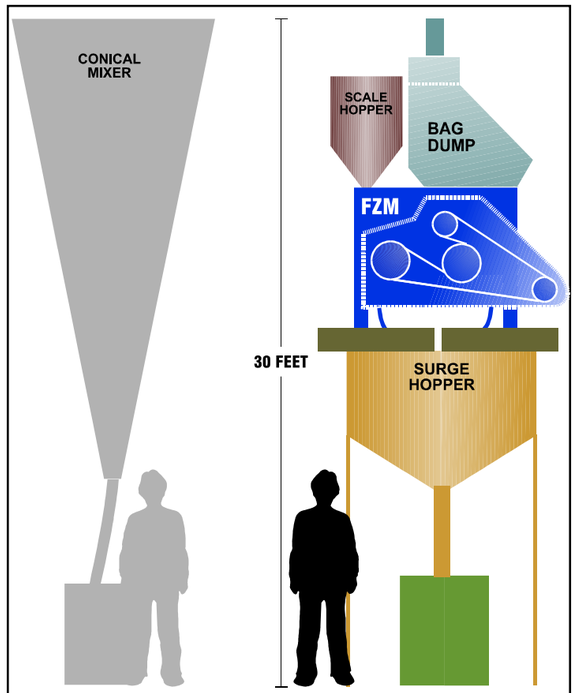
Put It To The Test

Claims such as 10 to 30 second mixing cycles are almost unheard of and contradict most historical mixing experiences. You may not be able to believe such claims without seeing them for yourself.

We invite you to take advantage of our Customer Participation Test Program. Call us to schedule a test at our in-house test facility to learn and observe firsthand the many benefits of the Fluidized Zone Mixer. Or rent a unit for testing at your plant.

Integrated Systems

The optimum fluidized mixer system would pre-weigh and pre-stage ingredients, then mix and quickly discharge a batch into a large static or agitated surge hopper. Complete systems with feeders or scale hopper above and conveyors below can be tailored to specific project requirements.



Four times the capacity for the same price in the same space

A bakery ingredient plant quadrupled its capacity by replacing an existing conical screw mixer with an FZM system. Heated flavored oils were sprayed into the fluidized zone to evenly coat sugar making it difficult to mix. Due to its shape, the conical mixer generated excessive friction, carmelizing the sugar based product.

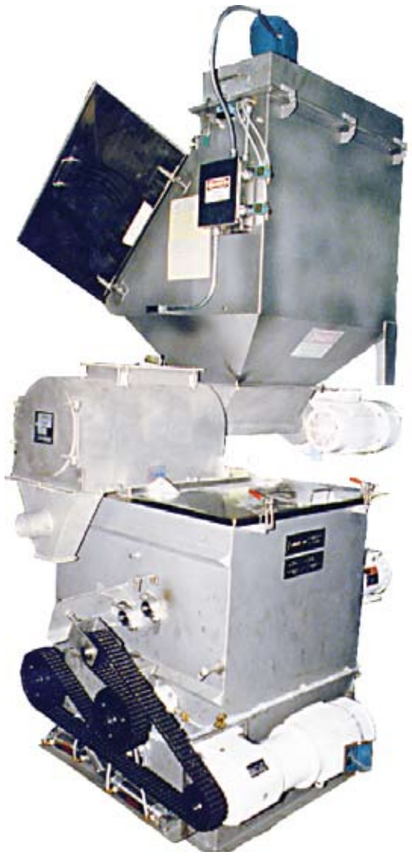
Now a scale hopper delivers a pre-weighed batch of major ingredient (sugar) into the FZM while bags of dusty minors are added through the combination bag dump/delumper. The flavored oils are pumped directly into the sugar mix with a batch mix time of 3 minutes. The wetted sugar drops into an agitated surge hopper mixer with metering screw.

Typical FZM Installations by American Process Systems

- Powder and granular spice mixes with liquids
- Silica based highway striping
- Aquarium salts
- Pigments with resin above extruder
- IQF (Individually Quick Frozen) vegetables
- Infant formula of milk sugar and protein powders
- Air bag propellant
- Salad croutons with seasonings
- Cocoa powder for cereal coating
- Super absorbent for diapers
- Space shuttle solid rocket booster core
- Coating prilled lawn fertilizer with active ingredients

Production size FZM with side access door and brackets for mounting on load cells.

- Coating whole bean coffee with flavors
- Granola mix
- De-blocking raisins for cereal
- Frozen meats and vegetables for frozen dinners
- Mortar mix with pigments
- Flavored instant coffee powdered blends
- Clay based herbicide with sprayed on liquid active ingredient
- Animal feeds



FZM System for cocoa and silicon dioxide cereal coating including filtered bag dump and centrifugal sifter.

FZM designed for IQF vegetable blending with surge hopper and vibratory feeder.

FZM showing two independent, shaft mounted drives - electronically interlocked.

Our Competitive Edge

Technology Features

- High mix efficiencies (1:1,000,000)
- Short mixing time
- Minimal product degradation
- Low rotor speeds
- Constant tip speed
- No shear
- Shear with optional high speed chopper
- Rapid mix cycles
- No heat generation
- Lowest cost per volume mixed
- Low power consumption
- Mass flow discharge
- Mechanical fluidization
- Organized and randomized transport system
- Exact scale-up
- No dead spots
- Weightless mixing

Standard APS Design Enhancements

- Solid agitator shafts lathed to ≤0.004” total indicator runout to assure optimal sealing surfaces
- Precision liquid additions
- Split packing glands for easy removal and maintenance
- Sanitary or industrial designs
- Stub shaft assembly for rotor removal through the top
- Extruded gasket captured in a formed channel for a superior seal around bomb bay doors
- Dual pneumatic cylinders on each bomb bay door plus leveling and door adjusting bolts for a uniform seal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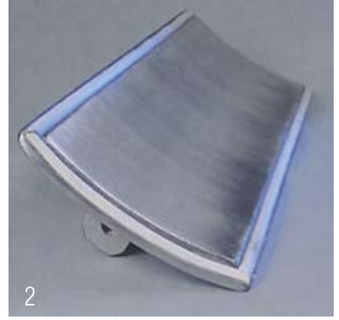
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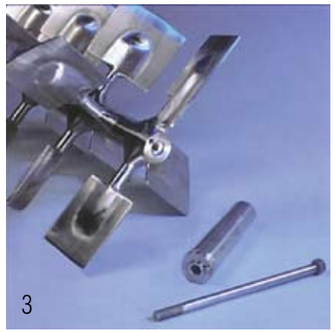
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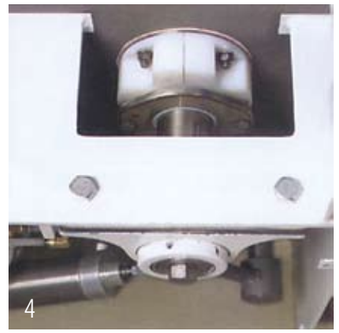
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1. Two half bomb bay doors with over-toggle mechanical linkage.
2. Flush, radiused bomb bay door with solid extruded gasket.
3. Stub shaft solid bar paddle assembly.
4. Split packing gland and suspended bearing.
5. Dual pneumatic cylinders.
6. Explosion proof construction and controls.
7. Shaft seal purge controls and mixer electrical controls.
8. Shaft seal filter regulator guage.
9. Removable gasket and high-pressure spray nozzle.

Optional Features

- High speed (1,700 or 3,600 rpm) choppers with choice of chopper heads for shear or de-agglomeration.
- Fluid coupling between motor and gearbox to allow for soft starts under load with 20-25% increased starting torque.
- Choice of discharge valves include half bomb bay doors, overtoggle bomb bay doors or spherical disc valves.
- Side access doors for additional entry to the mixer interior.
- Spray systems for liquid ingredients.
- Load cell systems.
- Controls customized per application and demand.
- USDA, FDA and USDA Dairy compliant.


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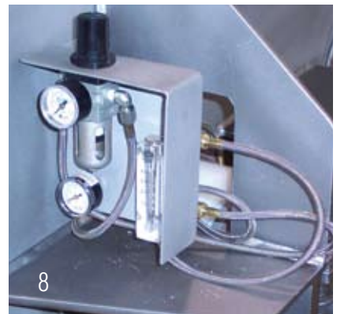
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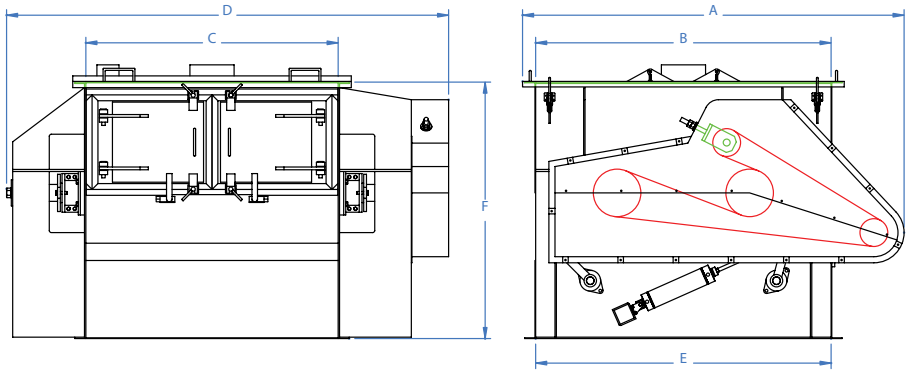
Standard blender sizes and approximate dimensions



Model	Capacity cubic feet/liters	HP (standard duty)	A	B	C	D	E	F
FZM-0.7	0.7/20	1 1/2	-	18 1/2	15 1/2	-	16	19
FZM-2	3/60	3	39	27	22 1/2	45	27	32
FZM-4	4/120	5	47	33	28 1/2	53	33	32
FZM-7	7/200	5	54	39 1/2	33 1/2	60	39 1/2	37 1/2
FZM-12	12/350	5	66	49 1/2	39 1/2	65	49 1/2	43 1/2
FZM-18	18/500	7 1/2	69	53 1/2	45 1/2	76	53 1/2	46 1/2
FZM-26	26/750	15	81	61	52	85	39 1/2	58 1/2
FZM-35	35/1,000	20	88	67	57	91	44	61 1/2
FZM-53	53/1,500	30	102	77	66	104	53	68
FZM-70	70/2,000	40	113	86	73 1/2	112	57	80 1/2
FZM-88	88/2,500	40	122	91 1/2	78	117	61	82 1/2
FZM-125	125/3,600	50	*	106 1/2	91 1/2	*	63	94 1/2
FZM-175	175/5,000	75	*	118	98 1/2	*	79	98 1/2

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