Catalog No. 194

Marion Mixers

Batch and Continuous Paddle and Ribbon Mixers for the Processing Industries



Packaging - Processing

Bid on Equipment

1-847-683-7720

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Marion Mixers

P.O. Box 286 • Marion, IA 52302 • 319/377-6371 Fax: 319/377-1204

50 Years of Mixing Experience

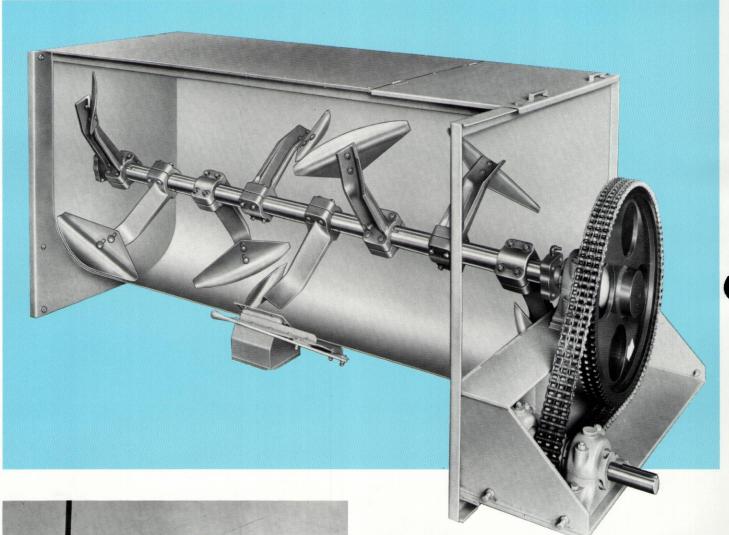
In 1938 Marion Mixers, founded as Rapids Machinery Company, developed a specially curved, adjustable paddle blade that provided a unique "figure 8" mixing action. This new design proved highly effective with both wet and dry materials and insured the steady growth of the company.

In later years, Marion Mixers were adapted to the increasingly sophisticated requirements of the chemical and food processing industries. Continuous mixers were developed for use on process lines. Stainless steel models were added to serve the food and pharmaceutical industries. Mixers with high speed choppers, heating and cooling jackets and

equipped for vacuum service were also developed.

Marion engineers and technicians have kept pace with the growing and changing requirements of mixer users. Their experience with a broad range of difficult and delicate mixing problems equips them to deliver a mixer to fit your requirements.

Today Marion supplies paddle and ribbon mixers to a broad range of industries where Marion Mixers have acquired a solid reputation for efficient performance and reliability. Marion customers include many of the leading names in American industry.





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Application List

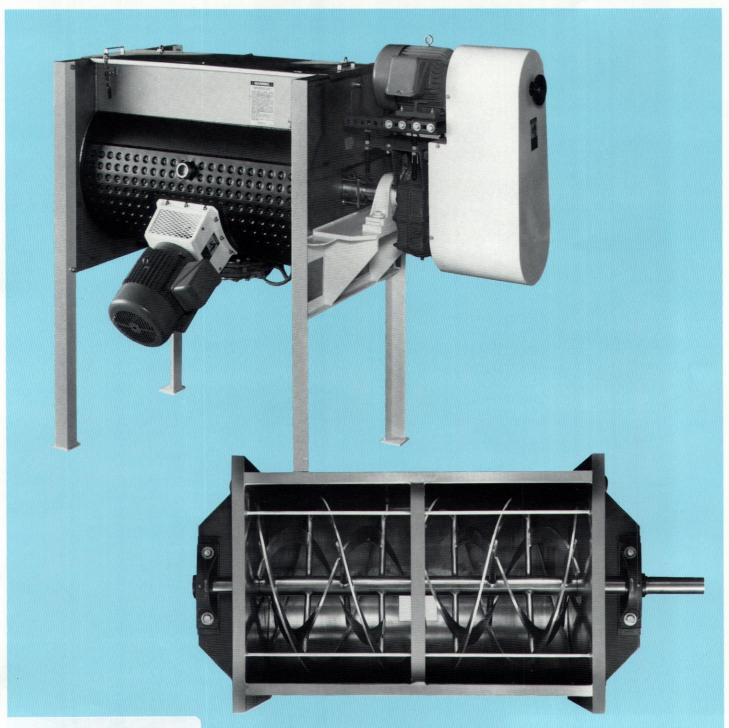
Marion Mixers are used across many varying and diverse industries. Batch and continuous applications may include products ranging from dry materials to heavily filled viscous materials. Some examples include:

Agricultural chemicals
Animal feed and pet foods
Asphalt products
Building materials
Cleaning products
Coatings
Food and beverages
Glass colorants and ingredients

Lubricants
Personal care products
Pharmaceuticals
Plastics
Refractories and ceramics
Seed processing
Waste treatment

Test Mixer Program

To allow customers to try mixers in their own laboratory or plant, Marion Mixers offers a 21 day free trial program using small scale mixers. Well designed trials are a reliable guide to production performance and show what design features might need to be incorporated in a full scale mixer. The prospective buyer pays only freight to and from the Marion plant and incurs no obligation to buy. To arrange for a test mixer, contact your Marion representative, or call our office in Marion, lowa, 319/377-6371.



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Why is the Marion a Better Mixer?

MANY DESIGN OPTIONS

Marion offers both paddle and ribbon type mixers, plus a large number of design options. A Marion Mixer can be custom designed and built for your particular application.



SAFETY

Marion Mixers are carefully designed to minimize hazards to workers and equipment. Built-in safeguards help prevent accidents in normal operation and all equipment is clearly labeled with appropriate information and warnings to operators. All Marion Mixers conform to OSHA standards in effect at the time of manufacture.

DURABILITY

Many Marion Mixers have been in continuous use for 30 or more years. Their heavy construction, quality materials and design for easy replacement of seals, paddles and other components, make Marion Mixers a reliable, long term investment. Parts subject to heavy wear can be made of abrasion resistant materials. Mixer end plates are strongly reinforced and bearings are housed in outboard pillow blocks.

FAST SERVICE

Marion maintains stocks of parts for most Marion Mixers made in the last 50 years. Shipment can usually be made the next day.

APPLICATION ENGINEERING ASSISTANCE

Marion field representatives and factory personnel represent many years of experience in matching mixers to user requirements. The benefit of this experience is yours for the asking when you contact Marion Mixers.



Choosing a Mixer

PADDLE TYPE

Paddle blades scoop, lift and tumble materials in a gentle thorough mixing action. Paddle blades overlap to heighten and speed mixing. Paddle mixers work effectively when filled to as little as 20% of rated capacity and are excellent for thoroughly mixing extremely small quantities of critical ingredients.

Marion paddle type mixers are excellent for mixing in fragile ingredients such as nuts, fiber glass strands, crystals and hollow glass spheres without degradation. Materials with dissimilar particle size and densities are mixed thoroughly, usually within 3 to 5 minutes.

Paddle mixers can be used for materials as light as shredded polyester, to as heavy as powdered metals. Dry blends, viscous fluids, and highly filled semi-solids are within their range of capabilities.

Paddle blade clearances of approximately .020" from the bottom of the trough assures a nearly 100% discharge. Blades angled toward the discharge perform the job quickly.

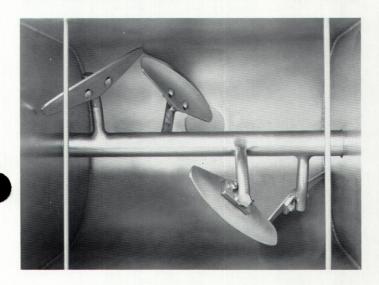
RIBBON TYPE

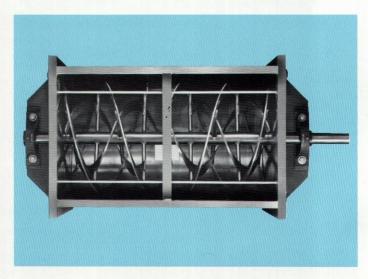
Ribbon mixers are capable of performing a variety of mixing operations. They are excellent for low density, free flowing materials. In mixes with small agglomerates, the greater shearing action of a ribbon mixer can be beneficial.

Ribbon mixers provide efficient slow speed agitation and are well suited to keeping mixes standardized through production cycles. The smaller surface area of the ribbons reduces resistance and permits operation with minimum power requirements.

Ribbon mixers are adaptable to either center or end discharge.

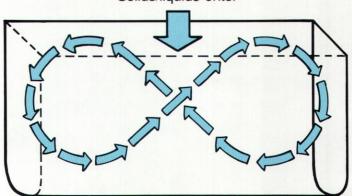
Marion ribbon mixers feature close tolerances, solid shafts and all-welded construction.





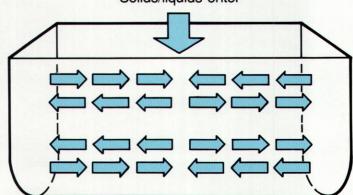
FLOW PATTERN OF PADDLE MIXERS

Solids/liquids enter



FLOW PATTERN OF RIBBON MIXERS

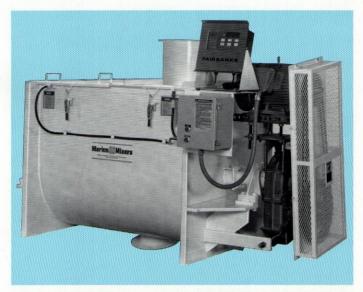
Solids/liquids enter



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Marion Batch Mixers



Model BPC-3648 carbon steel mixer with load cell mounting

Marion Batch Mixers are built with the sturdiness needed to give you years of day-in, day-out use with a minimum of maintenance.

Each size is designed to include the proper trough thickness, reinforced trough ends, shaft and bearing and drive components.

Because of their unique mixing action, Marion Paddle Mixers can mix batches as small as 20% of the mixing capacity with no loss of mixing efficiency, giving you a wide range of production flexibility.



Model SRS-2436 stainless steel ribbon mixer with variable speed gearmotor

Mixing is fast. Most dry mixes are completed within 3 to 5 minutes. Mixes with small percentages of minor ingredients or with liquid additives may take additional time.

Marion Batch Mixers are readily available in carbon steel, abrasion-resistant steel, stainless steel and sanitary or USDA construction. A variety of shaft seals and discharge valves, liquid addition spray systems, heating or cooling jackets, and other options are available to meet your process needs.

Marion Mixers offers you a choice of more than 20 standard sized batch mixers.

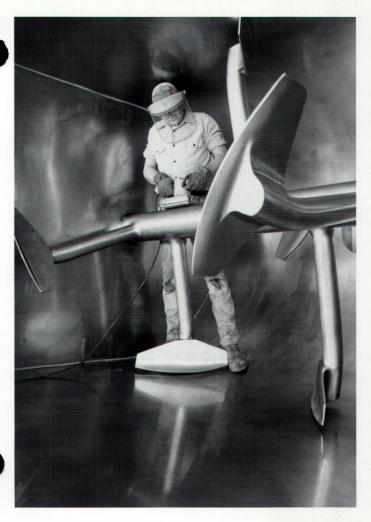
SPECIFICATIONS

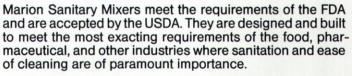
		RATED CAPACITY		INSIDE DIMENSIONS		OVE	RALL DIMENS	SIONS			TIMES!	
MODEL	PREVIOUS MODEL	MIXING CAPACITY CU FT.	TOTAL VOLUME CU FT.	DIA.	LENGTH	WIDTH	LENGTH W/STD. DRIVE	HEIGHT W/STD. LEGS	STD. DISCHARGE CLEARANCE	STD. AGITATOR RPM	STD. HP RANGE	APPROXIMATE MIXER WEIGHT W/STD. MOTOR
S-1224	1000	1.5	2.4	12"	24"	25"	55"	41"	18"	51	3/4-1	500 lbs.
S-1824	1100	3.5	5	18"	24"	25"	57"	47"	18"	48	11/2-2	600 lbs.
S-2436	2010	10	13	24"	36"	38"	61"	56"	24"	48	3-71/2	1,200 lbs.
S-2748	2030	15	24	27"	48"	40"	74"	64"	24"	48	5-71/2	1,500 lbs.
S-3648	3020	30	41	36"	48"	57"	85"	83"	32"	38	10-20	2,500 lbs.
S-3672	3040	45	62	36"	72"	62"	109"	85"	32"	38	15-20	2,900 lbs.
S-3696	3060	60	82	36"	96"	62"	133"	83"	32"	38	20	3,400 lbs.
S-42120		100	140	42"	120"	76"	160"	92"	32"	38	25-30	4,700 lbs.
S-5496	3150	140	210	54"	96"	82"	136"	106"	32"	38	30-40	6,700 lbs.
B-3648	4010	30	41	36"	48"	56"	89"	85"	32"	38	10-30	3,500 lbs.
B-3672	4020	45	62	36"	72"	56"	114"	85"	32"	38	15-30	4,000 lbs.
B-3696	4030	60	82	36"	96"	70"	138"	85"	32"	38	20-30	4,800 lbs.
B-4272	4033	60	84	42"	72"	73"	114"	92"	32"	38	20-30	5,100 lbs.
B-42120	4050	100	140	42"	120"	73"	162"	92"	32"	38	30-40	6,300 lbs.
H-42120	4055	100	140	42"	120"	73"	167"	92"	32"	38	50-75	7,700 lbs.
B-5472	4070	100	158	54"	72"	76"	114"	106"	32"	38	30-40	5,400 lbs.
B-5496	4110	133	210	54"	96"	76"	138"	106"	32"	38	40-50	7,100 lbs.
H-5496	4116	133	210	54"	96"	82"	143"	106"	32"	38	60-75	7,600 lbs.
B-54120	4120	166	220	54"	120"	76"	162"	106"	32"	38	50	7,700 lbs.
H-54120	4125	166	220	54"	120"	82"	167"	106"	32"	38	60-75	9,600 lbs.
B-54144	4140	200	320	54"	144"	76"	186"	106"	32"	38	50	8,400 lbs.
H-54144		200	320	54"	144"	82"	191"	106"	32"	30	60-100	10,500 lbs.
B-54168		232	370	54"	168"	82"	215"	106"	32"	30	60-100	11,400 lbs.
B-54192		266	460	54"	192"	106"**	235"	106"	32"	30	75-100	12,300 lbs.

Data is approximate due to variances that can be caused by different discharge valves, shaft seals, drive arrangements, etc. **Model B-54192 has side mounted motor/reducer as standard drive.

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Marion Sanitary Mixers







The paddle or ribbon agitator is of all-welded construction. All agitator and trough end weldments are made with a minimum ¼" fillet for ease of cleaning. All interior surfaces are polished to a 120-grit finish.

The Style E stainless steel shaft seals include pure braided TFE packing with air purge. An optional "Easy Clean" split design is available.

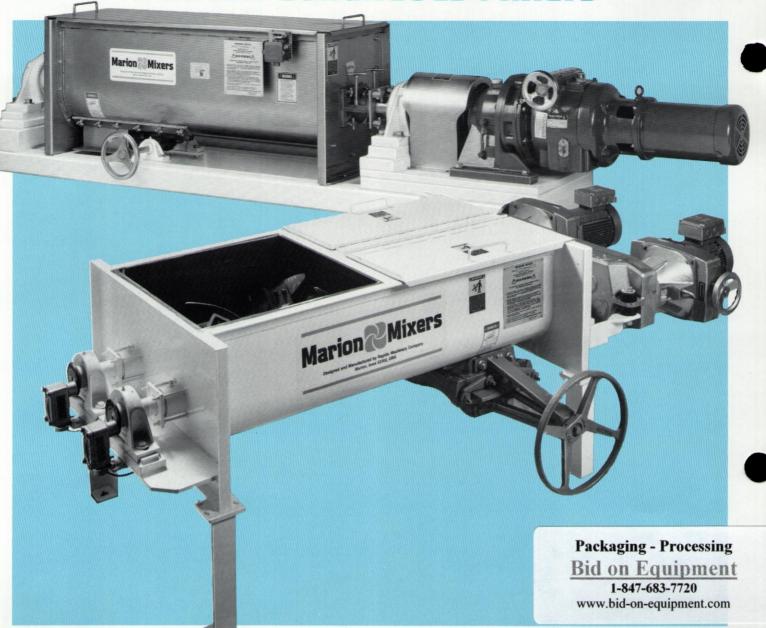
The standard butterfly discharge valve has a split body providing for easy disassembly and cleaning.

USDA accepted models of the Marion Sanitary Mixer have special exterior finish treatments which include inverted bearing plates and tubular legs.

Marion Sanitary Mixers are available in the same sizes as batch and continuous mixers.

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Marion Continuous Mixers



Marion supplies continuous mixers with either paddle blade or ribbon agitators. Paddle blade mixers are available with either bolted adjustable blades or welded blades in your choice of carbon or stainless steel. Continuous mixers can be built to meet sanitary and USDA specifications.

Subject to your mixing requirements, we often recommend the paddle blade design. Since each standard mixing stage is comprised of two blades moving the product forward, and one blade mixing and producing a counter-flow action, effective back mixing is achieved assuring product uniformity. With bolted on paddle arms and blades, users may easily experiment with alternate configurations.

Successful with products as different as cellulose insulation and fire retardants, molten chocolate and crunchies, or acetylene black and wetting agents, the Marion continuous mixer provides an opportunity to lower your production costs.

Continuous mixers can also be constructed with twin shaft double trough designs. Overflow discharge outlets can be provided.

SPECIFICATIONS

	= 1 7					CFH THRUPUT BASED ON FREE-FLOWING MATERIALS							
TROUGH DIMENSIONS				1 MIN. RE	SIDENCE	2 MIN. RE	SIDENCE	3 MIN. RESIDENCE					
MODEL	INSIDE LENGTH	INSIDE DIA.	HEIGHT	MIN./MAX. LOAD LEVEL (CF)	HP	MIN. LEVEL	MAX. LEVEL	MIN. LEVEL	MAX. LEVEL	MIN. LEVEL	MAX. LEVEL		
C1254 C2472 C2796 C36120 C42144 C54192	54" 72" 96" 120" 144" 192"	12" 24" 27" 36" 42" 54"	18" 30" 38" 48" 54" 66"	0.8-3.0 4.3-15.4 7.2-26.0 16.1-57.8 26.3-94.5 57.8-204.2	1-2 2-5 5-10 10-30 20-50 30-75	48 258 432 966 1578 3468	180 924 1560 3468 5670 12252	24 129 216 483 789 1734	90 462 780 1734 2835 6126	16 86 144 322 526 1156	60 308 520 1156 1890 4084		

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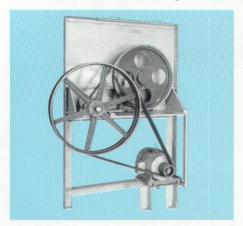
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Construction Features

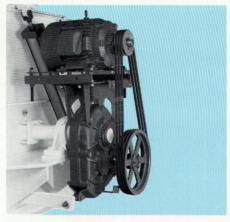
DRIVE ARRANGEMENTS



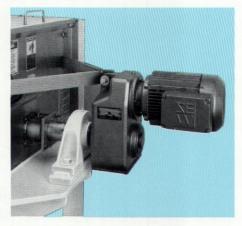
Marion Mixers are available with a variety of drive arrangements. These include V-belt and roller chain drives, shaft-mounted reducers or shaft-mounted gearmotors. Also available are foot-mounted concentric shaft reducers with a final roller chain drive. Other optional drives feature two-speed motors and variable speed gearmotors.



ROLLER CHAIN DRIVE—Features a V-belt drive from the motor to the countershaft and a roller chain from the countershaft to the mainshaft. A time-tested and cost effective drive system. Between-the-legs, top or side motor mounts are available.

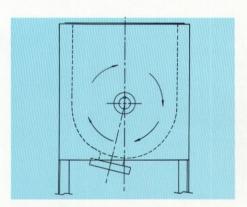


SHAFT MOUNTED REDUCER—Features a V-belt drive from motor to input shaft of sealed gear reducer. Reducers are recommended for slow speed or dusty environments. Shaft-mounted reducers are quiet in operation, require minimum maintenance and are available with a compact universal motor mount.

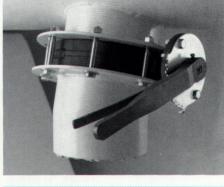


SHAFT-MOUNTED GEARMOTOR—Features an integrally mounted drive motor. Available with fixed or variable speed drives with in-line or right angle arrangement. Ideal for washdown applications.

DISCHARGE VALVES



BOTTOM OFFSET DISCHARGE—The bottom offset discharge is standard to facilitate washdown drainage.

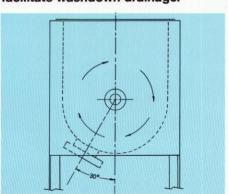


FLUSH CONTOUR VALVE—The contoured valve plate is hinged to swing up and seal against the bottom of the mixer providing a flush interior. Eliminates any pocket of product. Valve not recommended for partial discharge, since discharging material can become trapped between valve plate and mixer trough causing seal leakage. Pneumatic actuators and controls are available.

BUTTERFLY VALVE—With position locking handle. Shuts off quickly for partial batch discharge. Butterfly valve disc seals against resilient valve seat and is water and dust tight. The sanitary split-body butterfly valve is standard equipment on sanitary mixers. Pneumatic actuators and controls are available.



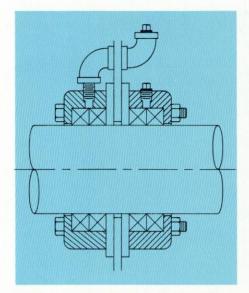
KNIFE GATE VALVE—Shuts off quickly for partial batch discharge. Minimizes product pocket above valve. Metal to metal seat is standard. Can be furnished with resilient seat for liquid, pressure or vacuum service. Lever, handwheel or pneumatic actuator and controls are available.



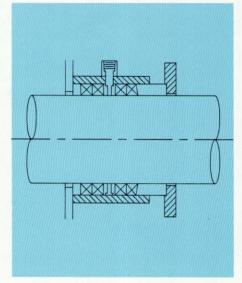
30° DISCHARGE—Discharge valves may be located on the upsweep side of the trough because the lifting, scooping action of the paddle blades discharges material at a faster rate.

Construction Features

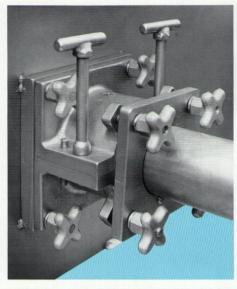
SHAFT SEALS



STYLE B-INSIDE/OUTSIDE SHAFT SEALS-Feature belt washers and four layers of felt packing rings. Optional packing is woven TFE/synthetic. Oil lubricated. Available on carbon steel mixers only.



STYLE E-STUFFING BOX SEAL—Features rings of woven TFE/synthetic packing with adjustable packing gland to compensate for packing wear. Pressurized air helps to prevent material from migrating along the shaft. Can be used for pressure, vacuum or liquid purge service.

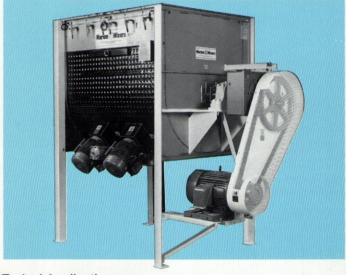


STYLE E-STUFFING BOX SEAL, EASY-CLEAN-Finger knobs installed in machined stainless steel cast housing permit fast and easy disassembly of entire stuffing box for cleaning or packing replacement. Recommended when mixing products that require cleaning between batches.

HIGH SPEED CHOPPER



One or more choppers can be added to any Marion Mixer to provide a combination of aggressive and gentle mixing. For example, a smoothly homogenous base blend can be achieved with the chopper in operation. It can then be turned off for mixing in fragile ingredients. The Marion Chopper operates at 3600 rpm to achieve smooth blends in a short time.



Typical Applications:

- To cut oil or shortening into bakery mixes.
- To disperse pigment into grouts or cement.
- To fluff and expand fibers to allow resin to be evenly blended.
- To develop colors in powdered paints.

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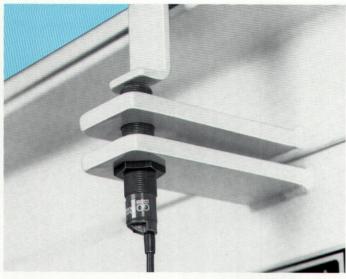
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Safety Features

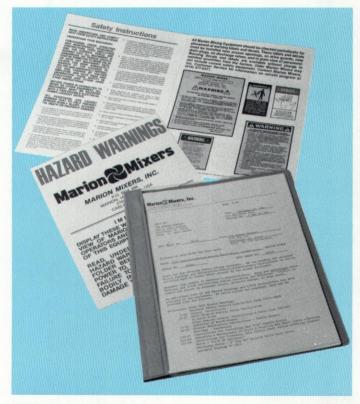
COVERS



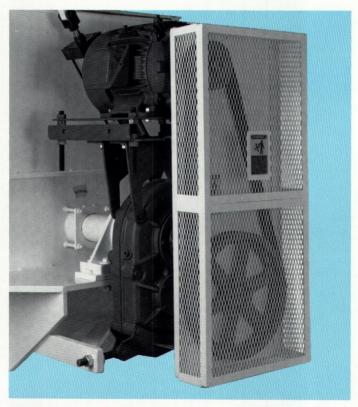
STANDARD GASKETED COVER—Standard cover is bolted to mixer trough with hinged access panel at end opposite drive. Sanitary models feature lift-off covers. Standard 1/6" sponge rubber gasketing makes the cover dust tight. Lift-out safety grates with limit switches are standard. Cover arrangements with special flanged inlets or vents can be fabricated. Special gasketing is available.



LIMIT SWITCH—For safety shutdown. Switch is activated when safety grate or cover is lifted and operates by cutting power supply to the motor when the switch is wired to the motor starter (wiring not included).



All Marion Mixers are shipped with complete safety labeling. A complete set of safety instructions is provided for the purpose of training operators in the safe operation of Marion Mixers.



DRIVE GUARDS—All Marion Mixers are equipped with guards that enclose the drive train.

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Accessory Equipment

Greater and more economical production rates can be achieved with the combination Marion Mixer and surge bin. Uniquely mated, the combined mixer and surge bin give you maximum use of floor space and headroom.

The surge bin receives the entire batch and frees the mixer for additional processing while a screw conveyor discharges the mix continuously to downstream operations such as extruding, pelletizing or packaging.

The Marion Mixer is mounted directly on the surge bin frame. A gasketed access panel with limit switch is provided in the end of the surge bin.

Scale Equipment

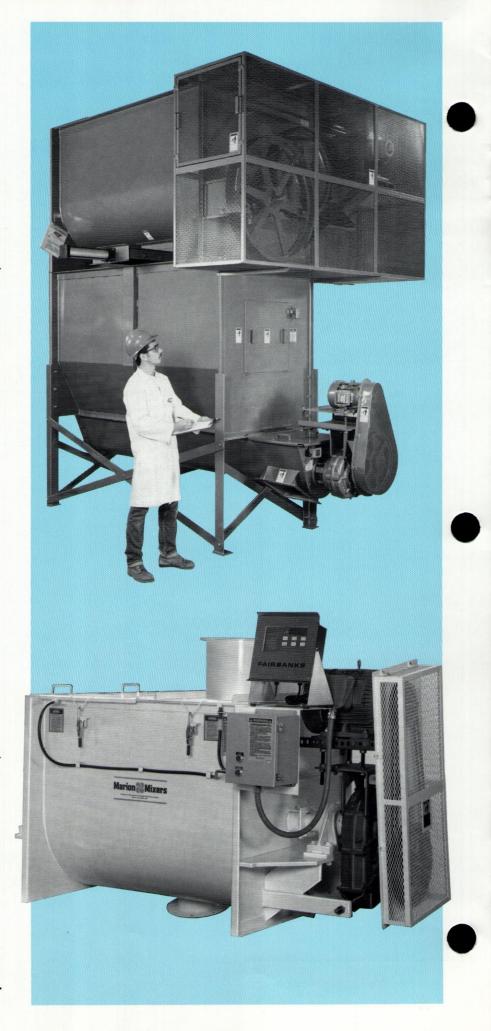
Marion Mixers can easily be matched to a variety of weighing devices. These direct support weighing systems allow the mixer to be used as a batching vessel.

A simple tank lever mechanical scale can be provided and used with either a dial attachment; or, with the use of a load cell, a digital indicator can be used and interfaced with data processing or recording equipment.

Complete load cell systems are available and can be equipped with a variety of weight indicators to provide single or multi-ingredient batching. Batch controls can be interfaced with in-plant computer control networks. A variety of load cells are available and can be used for direct support or suspension of the mixer. Load cells are available for wash down service.

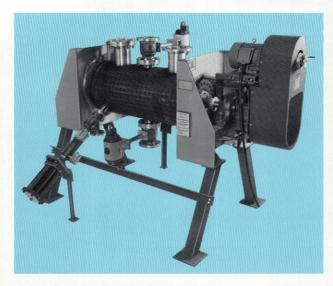
WEIGH HOPPERS

Weigh hoppers are available for pre-weighing of ingredients. These hoppers can be provided with mechanical or load cell systems. A pneumatically operated discharge valve is provided.

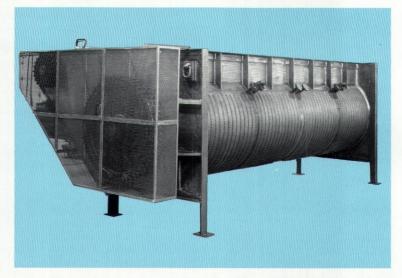


Custom Design Features

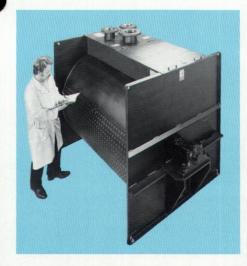
As fast, thorough and versatile as the Marion Mixer is, some applications may be facilitated by the addition of custom design features. Following are some of the more common custom features available with Marion Mixers.



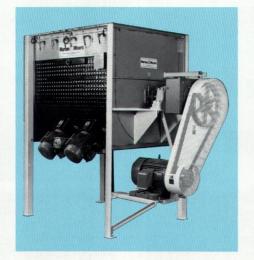
CYLINDRICAL MARION MIXER—Mixer trough is completely cylindrical, offering the best horizontal mixer design for internal pressure or vacuum. In addition, closely swept interior surfaces give excellent heat transfer surface to product volume ratios. The mixer shown operates at full vacuum and cryogenic temperatures.



A semi-cylindrical mixer built for low pressure requirements includes heavy reinforcing along the straight sides. Cover is heavy plate design. Drive is concentric shaft reducer with final roller chain drive.



SEMI-CYLINDRICAL MARION MIXER—Mixer trough is curved through 300° so the trough is closely swept by the agitator. "Pinch points" are eliminated on the downsweep side where large, fragile materials can be damaged. Less material accumulates on the upsweep side providing for faster, more thorough mixing.



Jacketing the Marion Mixer adds another dimension to the mixing process by providing heating for drying or reacting. The jacket may also provide cooling to take away unwanted process heat.

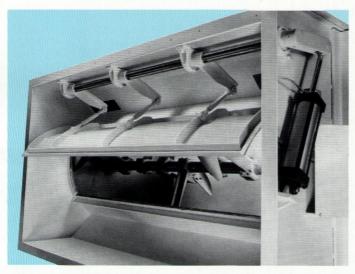
Jackets are built to ASME code standards, are furnished with code stamp and are available in carbon or stainless steel for pressures up to 150 psig or as required. Multiple choppers can be provided on jacketed mixers.



Special cover features can be provided to suit the application. Flanged inlets, vents and vacuum receiver ports are available. Counterweights on access ports or cylinder actuated covers can be furnished.

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Custom Design Features



The optional drop bottom on a Marion Mixer opens, dumps the complete batch, and closes quickly to help speed production. Because of the close clearances between the agitator and trough, barely a handful of material is left after discharge minimizing cross batch contamination. Available in most standard sized Marion Mixers. Includes dust skirt and displaced air vents for dust free connection when mounted on the Marion surge bin.



Tilt-tub mixers are available for thick pasty materials. Can be manually, hydraulically, pneumatically or electrically operated.



Marion Twin Mixers give you the advantage of being able to produce large batches in about half the headroom needed for a single trough mixer. While the price of a Marion Twin Mixer will be higher than that of a single trough unit of comparable capacity, the additional cost is frequently far less than the construction costs involved in modifying existing plants to accommodate a large, single trough mixer.

Marion Twin Mixers are produced in batch or continuous units and are readily available in carbon, abrasion-resistant, or stainless steel. Sanitary construction is also available plus a variety of shaft seals and discharge valves, liquid addition spray systems, heating or cooling jackets, and other options to meet your process needs.

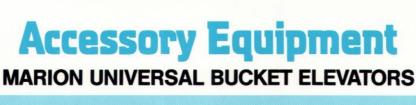


A variety of liquid addition manifolds are available. Furnished with interchangeable spray nozzles, these can be easily changed to modify spray rates or patterns. Air-atomizing nozzles are available for extremely fine dispersion of liquids. Manifolds are mounted on the upsweep side and are available with carbon or stainless steel piping.

Other common custom design features include:

- Agitator design can incorporate double arming as well as low profile or oversized blades.
- Sanitary construction with all-welded interiors and generous weld fillets for ease of cleaning between batches of pigments, flavors, foods, pharmaceuticals, etc.
- Abrasion-resistant steel construction with heavier mixer troughs and paddle blades. Paddle blades are easily adjustable and replaceable to compensate for wear.
- Variety of special cover arrangements for unusual loading or sampling requirements.
- Variety of shaft seals.
- Variety of discharge valves.
- Load cell or scale mounting.

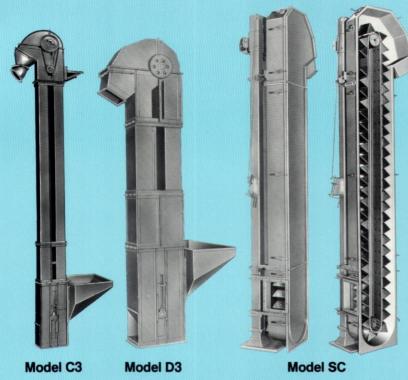
Packaging - Processing Bid on Equipment



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Model U1



Model SC gives you 100% clean-out in any processing plant. Entire front panels can be quickly removed. Entire belt and bucket assembly can be removed and re-installed in minutes. Available in heights up to 30 feet. Capacities up to 1,000 cu. ft. per hour.

FEATURES

Capacities to 7,500 cu. ft. per hr. Any exact height to 100 ft.

Self-supporting. Rugged steel construction throughout.

Head and boot built with rigid welded angle frames.

Dust-tight housing with Micarta and UHMW polyethylene shaft seals.

Obstruction-free interior prevents material accumulation and facilitates cleaning.

Can be lengthened or shortened at any time.

Available in carbon or stainless steel construction.

Easy to install and maintain.

Model U1 is recommended for corrosive, abrasive, or hard-to-handle materials.

Options include dump hopper safety grates, bag splitters, automatic boot cleanout, special belting and bucket materials for demanding applications.

MOTOR CONTROLS



Motor controls can be furnished to operate Marion Mixers and auxiliary equipment. These can be factory wired and easily disconnected for shipment. A large number of control options are available.

PUMPING UNIT



PUMPING UNIT—Includes 1" all-iron pump with relief valve, direct-coupled to 1 hp TEFC motor. Five gallon reservoir with cover included. Larger reservoirs available. Pump capacity approximately 5 gpm at 1200 rpm. For non-viscous fluids. Stainless steel pumps, fittings and reservoirs optional.

