MIXING & BLENDING







Fristam PUMPS®

Engineered For Lasting Performance®

SHEAR BLENDER

FRISTAM FS



Fristam's in-line FS Series Shear Blender blends products quickly and consistently. Compared to conventional methods, the Shear Blender shortens processing times significantly.

The Shear Blender's rotor–stator design eliminates unblended product and prevents lumps and masses in product for consistent, repeatable results.

Fristam's FSI Series Shear Pump is an impeller-style version of the Fristam FS, for applications requiring both pumping and mixing.

www.fristam.com/fs

BLEND, DON'T STIR

The FS Shear Blender uses high tip speeds and close clearances between surfaces to create an effective, highly turbulent mixing zone.

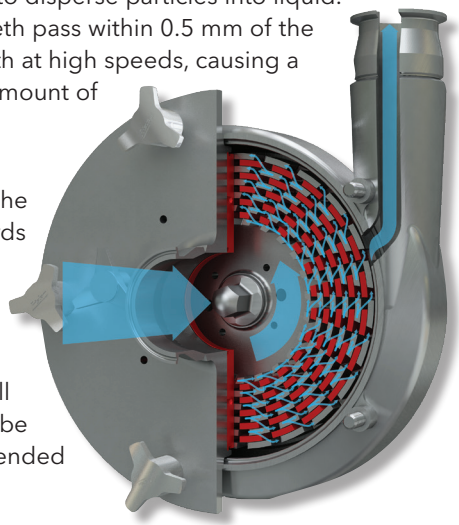
Traditional batch mixing processes can result in a lot of waste. Product tends to stick to the sides and bottom of the mixing tank and may never reach the agitator. This results in extended processing time waiting for the product to blend.

With the Fristam FS, all of the product is passed through a rotor–stator system before reaching the tank, ensuring a thorough and complete mix, in minimal time.

IMPROVED PRODUCT TEXTURE

Fristam's FS Shear Blender uses an intermeshed rotor–stator system to disperse particles into liquid. Its rotating teeth pass within 0.5 mm of the stationary teeth at high speeds, causing a tremendous amount of turbulence.

As centrifugal force pushes the product towards the outlet, the intensity of this turbulence ensures that all product must be thoroughly blended to exit the FS.





FS Cover and Stator



Stator Teeth
Rotor Teeth
Product Flow

REPEATABLE RESULTS

With the FS, all of the product is processed through its rotor–stator at a controlled concentration, achieving a complete and consistent mix while saving ingredients. With a batch tank mixer, some product may be needlessly mixed over and over, while some product may not be mixed at all.

SAVES ENERGY

Since most blending can be done in a single pass, the energy is exerted precisely and for a shorter time than with in-tank mixing.

EASY MAINTENANCE

Designed with a front-loading seal, the FS allows production personnel to service the blender in place, with no special tools.

FULLY CIP'ABLE

The fully CIP'able design of the FS meets the most stringent sanitary standards.

DIVERSE APPLICATIONS

Different rotor–stator options are available to accommodate a wide variety of specific blending types.

- Blend
- Emulsify
- Disperse
- Dissolve
- Texturize
- Reduce particle size



FS SERIES SPECIFICATIONS

- 12 Models
- Tip Speed up to 145 ft/s (44m/s)
- Flow Rate up to 375 gpm (85 m^3/hr)
- Viscosity up to 30,000 cps

FSI OPTION



Fristam's FSI Series Shear Pump is an impeller-style version of the Fristam FS Series Shear Blender. A pump and blender in one–for applications requiring both pumping and mixing– Fristam's FSI has an integrated impeller that provides high flow rates while still mixing your product. See www.fristam.com/fsi

TECHNICAL DATA

Download literature, 2D/3D drawings, pump curves, and operating and maintenance manuals all at: www.fristam.com/tech

FIX YOUR MIX

Is your current in-tank mixer not producing the mix you need? Don't replace it; supplement it affordably with an FS Shear Blender. Fristam's FS Shear Blender eliminates lumps, clumps, and fisheyes; wasted ingredients; and clogged filters.

It uses an intermeshed rotor–stator system to quickly disperse particles into liquid in just one pass. By installing an FS Shear Blender after your existing mix tank, you'll produce a consistent, thoroughly blended product time after time.

CASE STUDIES

Read all about how the Fristam FS Shear Blender has helped others fix their mix: www.fristam.com/fs-apps

COLLOID MIXER

FRISTAM FCM



FCM TAKES THE COLLOID MILL TO THE NEXT LEVEL

Fristam's FCM Colloid Mixer produces consistent particle sizes for reliable, shelf-stable emulsions while saving processors significant time and effort.

It features a time-saving external adjustment lever that allows on the fly gap adjustment and eliminates the need to open the mill between batches.

Its easy, hands-off Clean-In-Place (CIP) design allows all parts to remain in place during cleaning, reducing maintenance time and effort.

www.fristam.com/fcm

FCM SERIES SPECIFICATIONS

- 1 Model
- Max. Sheer rate 143,000 1/s
- Sub-Micron Particle Size
- Flow Rate up to 120 gpm (27 m^3/hr)

QUICK TURNAROUND

Save time between batches because you never have to open the FCM between products.

ON THE FLY GAP ADJUSTMENT

The FCM's innovative external gap adjustment lever allows changing the gap to produce more or less shear without moving the inlet or outlet ports or even pausing operation.

CIP WITHOUT DISASSEMBLY

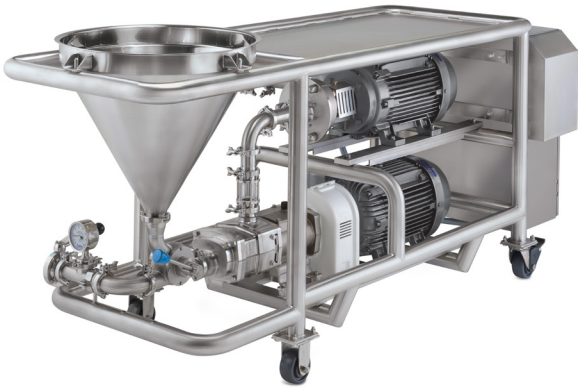
The FCM is designed for hands-off Clean-In-Place (CIP) that allows you to adjust the gap to the maximum setting and CIP through the mixer, without removing any parts.

CONSISTENT PARTICLE SIZE

The FCM's variable gap allows you to dial in the particle size you need for shelf stable emulsions. It allows for consistent particle sizes with a tight distribution.

POWDER/LIQUID MIXER

FRISTAM PM



INTEGRATED SYSTEM

Fristam's Powder Mixer blends dry and wet ingredients into a fluid stream and maintains performance even as product viscosity increases.

Fristam's Powder Mixer incorporates the uniform powder induction of the FZX liquid ring pump or the FDS twin screw pump and the thorough blending of the FS Shear Blender into a single, compact system.

INFINITE BATCH SIZES

Since the Fristam Powder Mixer is an in-line system, it is capable of operating on both small and large batches. The only difference is the amount of time it would take to run the batch.

MIX IN MINUTES

Most powders are wetted and fully dispersed on the first pass through the Powder Mixer, dramatically reducing process times.

CONSISTENT POWDER INDUCTION

Fristam's Powder Mixer utilizes pumps that are capable of generating a strong vacuum on the suction side when used in combination with a restricting valve on the incoming fluid stream. This vacuum can be maintained throughout the entire product run, ensuring your powder rate will remain consistent and fluid will not back up into the funnel.



Traditional funnel/pump powder inductors rely on gravity, vortex or Venturi to push powder into the fluid stream. These methods all require very specific control of the flow rate to maintain proper induction. As product viscosity increases, flow rate decreases, causing the induction rate to stall and can even clog the pump.

Because the FZX and FDS pumps are capable of pumping product with entrained air, they will not lose prime and cause fluid to back up into the funnel. The result is consistent flow, no plugging and a well-blended product.

The Powder Mixer's full-port induction valve eliminates powder bridging and ensures maximum powder induction rate. Vacuum gauges monitor suction for repeatable results.

PORTABLE

All Powder Mixer models can be portable, with locking wheels. This allows the Powder Mixer to be moved easily to different processes and locations within the facility as needed.

FULLY CLEANABLE

Fristam's Powder Mixer is designed for complete cleaning with a Clean In Place (CIP) system. The pump, blender, and piping are all 3-A CIP'able. The funnel can be made CIP'able or simply removed for cleaning.

ERGONOMIC AND SAFE

The Powder Mixer operates at floor-level, eliminating dangerous ladder climbing or accidental falling or dropping of equipment from mezzanines. Also, with its waist-height funnel top, there is no bending or climbing to pour powders.

PM SERIES SPECIFICATIONS

- 9 Models
- Induction rate up to 600 lb/min (272 kg/min)
- Flow Rate up to 300 gpm (70 m^3/hr)
- Viscosity up to 5,000 cps PM-FZX
- Viscosity up to 1,000,000 cps PM-FDS*

PM	Flow Rate	Max. Induction Rate lbs/min (kg/min)			
Model	GPM (m^3/hr)	Sugar/Salt	Starch/WPC/ Cocoa	Pectin	Carbopol/ Xanthan
01-10	15 (5)	30 (15)	20 (10)	5 (2.7)	5 (1)
10-52	50 (10)	100 (45)	65 (30)	20 (9)	10 (5)
15-52	90 (20)	175 (79)	115 (50)	35 (16)	20 (10)
20-53	120 (25)	225 (102)	150 (70)	45 (20)	25 (10)
25-53	150 (35)	300 (136)	200 (90)	60 (27)	30 (15)
35-53^	250 (55)	500 (225)	335 (150)	100 (45)	50 (25)
40-53^	300 (70)	600 (270)	400 (180)	120 (55)	60 (25)
2-52*	75 (15)	150 (70)	100 (45)	30 (15)	15 (5)
3-53*	125 (30)	225 (100)	150 (70)	45 (20)	25 (10)
* PM-FDS Models ^ Larger models are 2-piece units					

www.fristam.com/pm

- Technical Info
- Videos
- Case Studies



MIXING & BLENDING APPS

DAIRY



- Chocolate milk
- Ice cream mix
- Yogurt base
- Low-fat & non-fat sour cream
- NFDM reconstitution

BEVERAGE



- Sucrose
- Soda syrup & concentrate
- Drinkable yogurt
- Protein supplement drinks
- Energy drinks

FOOD



- Salad dressing
- Batter
- Plant-based meat
- Condiments & sauces
- Non-dairy creamer

PERSONAL CARE



- Shampoo & conditioner
- Sanitizer gel
- Lotion
- Body wash & scrub
- Toothpaste

BIO-PHARMACEUTICAL



- Syrups & suspensions
- Media prep
- Buffer solution
- Glucose
- Oil emulsions

DISTRIBUTED BY:

Holland
APPLIED TECHNOLOGIES

Fristam PUMPS®
Engineered For Lasting Performance®

1 800 841 5001 | www.fristam.com/usa

Part #1050000356 | ©2023 Fristam Pumps USA