Fristam Shear Blenders - FS





Fristam
Mixing & Blending Experts

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Exceptional rotational homogenizers designed to produce perfectly blended products with consistent quality. Hygienic, efficient, robust and highly economical, Fristam Shear Blenders deliver exceptionally homogeneous results while reducing raw material consumption and significantly shortening processing times.

EXCEPTIONAL PRODUCT TEXTURE

Fristam's FS series enables efficient blending of multiphase products, producing stable emulsions and homogeneous end products. The system prevents lumps and agglomerates in the conveyed product, ensuring consistent and repeatable results.

With enforced product passage, the Shear Blender treats the entire product stream uniformly. Compared with conventional dissolving processes in large tanks or boilers, the Fristam FS delivers consistent results through a more efficient and controlled process.

PERFECT VISCOSITY

The consistency and texture of sheared products can be adjusted by pairing the FS with a frequency converter. This allows precise control of the shear rate, resulting in smoother, more stable end products with improved overall quality.

SPECIFIC CONSTRUCTION

Fristam Shear Blenders are based on the proven design of the FP series centrifugal pumps. Instead of a conventional impeller, they use a rotor–stator system that draws in product and forces it through shear gaps of just 0.5 mm at tip speeds of up to 38 m/s (see figure).

The combination of high flow rates, intense turbulence and high shear forces enables highly efficient blending of multiphase products.

All standard shaft seals from the Fristam pump range can also be used with the FS.

RETRO FITTED UPGRADES

The FS can be fitted downstream from an existing mixer or process to give the product a final pass mix. Keeping the cost of modifications minimal.

CUSTOMIZED PERFORMANCE

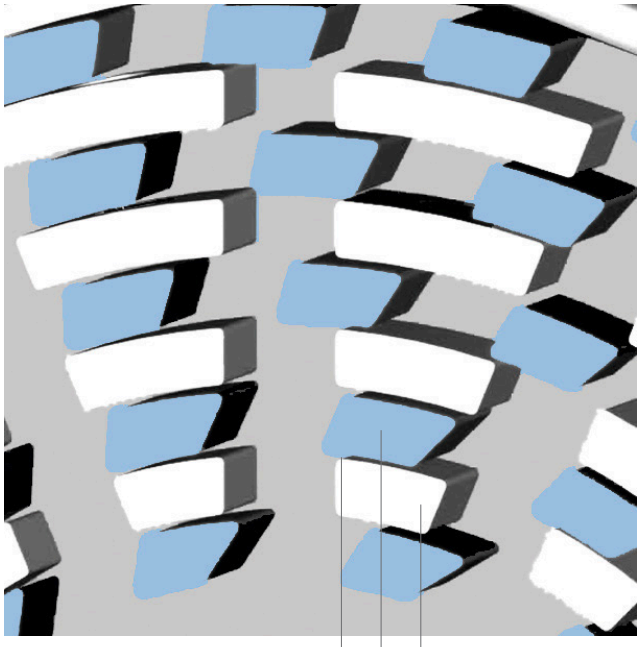
Each FS can be equipped with a specific rotor–stator combination, selected to match the characteristics of the product being processed. This ensures that the appropriate level of shear energy is applied for optimal results.

All Fristam FS series Shear Blenders are suitable for a wide range of batch sizes and are fully compatible with SIP and CIP processes.

SERVICE, ADVICE AND TESTING

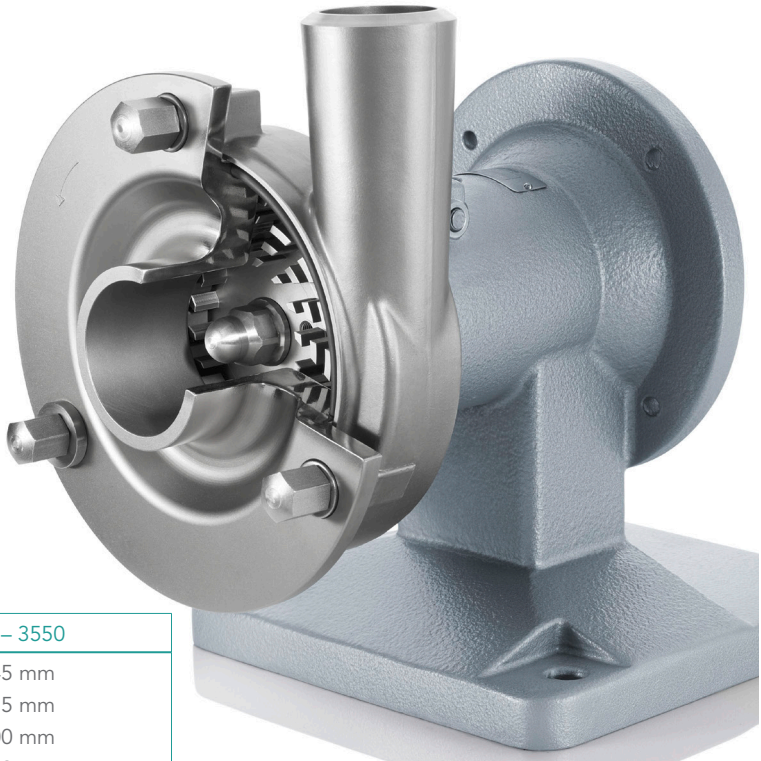
As applications vary in type and complexity, we provide process-focused advice to develop tailored solutions, ranging from single units to large in-line installations.

Fristam offers shear pumps for trial and test runs to support process evaluation and optimization.



TECHNICAL DETAILS OF THE FS SERIES

- 5 basic sizes
- Rotor Ø from 124 to 250 mm
- Shear rates up to 125,000 1/s
- Revolution speed up to 5,800 rpm
- Viscosities up to 100,000 mPa s



SPECIFICS	FS 710	FS 3520 – 3550
Rotor diameter	124 mm	3522: 145 mm 3532: 175 mm 3542: 200 mm 3552: 250 mm
Motor output	2.2 kW – 11.0 kW	3.0 kW – 90.0 kW
Revolution speed 50 Hz / 60 Hz	1,450 – 3,500 rpm	1,450 – 3,500 rpm
Shearing clearance	0.5 mm	0.5 mm

MATERIALS

Standard:
Stainless steel, cast or forged, CrNiMo, No. 1.4404 (316L)

Options:
- Titanium
- Hastelloy C
- Other precision casting materials e.g. materials with a delta-ferrite content of less than 0.5%

MOTORS

Three-phase motors IP 55 / IP 56

Options:
- Frequency controlled
- With higher protection system
- Ex protection
- Special voltages and frequencies
- Single-phase AC motors
- Geared motors

PRODUCT WETTED SURFACES

- Blasted
- Ground
- Polished or electro-polished
- Hardened and / or coated

CONNECTION TYPES

- Threads according to DIN 11851, DIN 11864, SMS, RJT, etc.
- Flanges, clamps

SPECIAL DESIGNS

- Various combinations of rotor / stator
- Heating or cooling jackets
- Drain ports
- Carriers



Only the best mixers for the best products: ideal solutions for even the most challenging applications

Around the globe, Fristam Shear Blenders, Powder Mixers and Colloid Mixers are used by leading companies in food, beverage, pharmaceutical and chemical industries. The exceptional quality of construction and manufacturing makes our rotational homogenizers ideal for blending and dispersing in any industrial process.

PRODUCT GROUPS

- Alcoholic beverages: liqueurs, wine, champagne, distiller's wash, spirits, alcoholic solutions
- Biotechnology: cell suspensions, nutritive solutions, enzymes
- Brewing: mash, yeast, beer, hot and cold wort, waste beer
- Chemicals: inks, dyes, detergents, cleaning agents, photographic emulsions, wastewater
- Dairy products: butter, yogurt, cream, skimmed milk, milk concentrate, set milk, flavoured milk, whey, whey concentrate, raw milk, cream cheese
- Foods: sauces, soups, flavorings, broth, vinegar, fruit and vegetable juices and purees, mayonnaise, oils and fats, whole egg, brine, dough
- Non-alcoholic beverages: syrup, concentrates, fruit juices, mineral water, sodas and mixed drinks containing CO2, concentrates with fruit pulp
- Paper and cellulose: glues, starch, resin and kaolin solutions
- Pharmaceuticals: infusion solutions, lotions, ointments, plant extracts, perfumes, suspensions, toothpaste, ethanol, enzymes, culture mediums, toxic and alcoholic solutions, special pastes
- Sugar and confectionery: chocolate, liquid sugar, molasses as well as starch solutions



Examples of Fristam Mixing & Blending in action, across a range of different industries

Fristam mixing and blending solutions enable manufacturers to achieve consistently homogenized products of superior quality in a single processing step. They can also be integrated downstream to refine products from earlier production stages, delivering precise consistency and a high quality finished product.

DAIRY INDUSTRY

- Dissolving and homogenizing stabilizers such as gelatin, pectin, carrageen, xanthan gum, guar flour, carob gum etc. in fermented milk products
- Dissolving sugar, milk-, whey-, yogurt-, cream- or protein powder
- Recombining milk with skim-milk powder, water, butterfat or vegetable oil
- Producing shakes with whey, soy milk or milk, ice cream, etc.
- Dissolving concentrated milk protein, oil or fat in milk, in order to raise protein or fat levels in the production of cheese

FOOD INDUSTRY

- Dissolving yeast extract for health products
- Dissolving protein powder, thickeners and stabilizers
- Dissolving starch, salt, sugar, etc. (in the production of additives, eg. for tomato ketchup and sauces)
- Dissolving aspartame and other sugar substitutes
- Producing toffee cream from sugar, glucose, carrageen and fat
- Dissolving aromas and citric acid
- Dissolving spray-dried protein powder in the production of baked goods
- Dissolving wheat and rye flour or shred in the production of sourdough, breakfast cereals or baking mixes
- Dissolving pectin, carboxymethyl cellulose (CMC), Carbopol, arabic gum and other thickeners such as carob gum, guar flour, and xanthan gum

BEVERAGE INDUSTRY

- Dissolving sugar, minerals, pectin, xanthan, aromas, citric acid, bentonite etc.
- Dissolving dry yeast in the production of beer
- Dissolving sugar in alcohol

CHEMICAL INDUSTRY

- Dissolving powders in liquids such as Polytetrafluoroethylene (PTFE), and additives in lubricants
- Dissolving minerals such as calcium carbonate, carboxymethyl cellulose
- (CMC), bentonite, layered silicate when producing drilling emulsions
- Dissolving micro-capsule powders and fillers such as zeolite and aluminum hydroxide in the production of polyurethane sheets

PHARMACEUTICAL AND BEAUTY CARE INDUSTRIES

- Dissolving saline eg. for isotonic solutions suitable for injection
- Dissolving phosphate and iodine powder in the production of disinfectant ointments
- Dissolving emulsifiers and additives in the production of creams and lotions
- Dispersing carbopol in the production of hand sanitizer



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