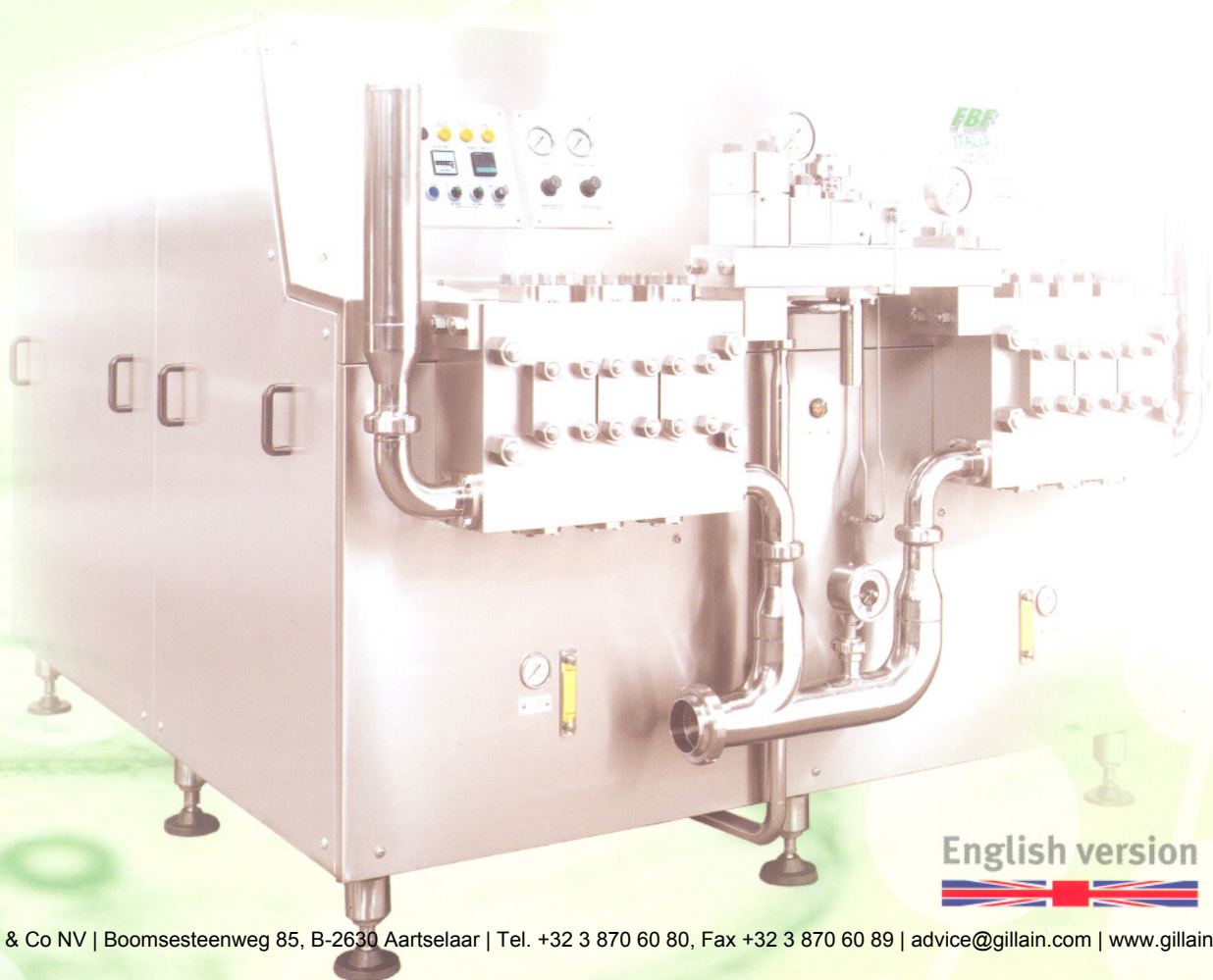




Gillain & Co

HYGIENIC EQUIPMENT FOR FOOD & LIFE SCIENCES

H.P. Homogenizers

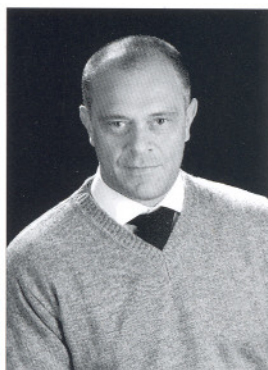


English version





Roberto Belicchi



Mario Femiano



Bruno Fattori



Roberto Vecchiattini

H.P. Homogenizers





Getting you results is our goal.

FBF ITALIA designs and manufactures homogenizers, piston-type positive displacement pumps, laboratory homogenizers and dosing systems.

Thanks to its accumulated expertise in this sector, since 1987 FBF ITALIA has been a key point-of-reference for system manufacturers and end-users in the food, chemical and pharmaceutical fields.

FBF ITALIA has a consolidated and ever-expanding presence, via its large sales and service network in Italy and throughout the world, which has generated consistent growth in production and sales figures.

One of the reasons behind this highly positive trend is unquestionably the special, direct relationship between the company's management and its customers, a relationship built on mutual evolution and innovation.

The mission of FBF ITALIA is to offer customers not only excellent sales service, but also to continue this relationship with constant, direct post-sales technical assistance.

Present in over forty countries around the globe, our agents and representatives are organised to give a quick response to all requests for sales and technical support.

On-going innovation, exacting development of special materials, strict quality controls and endurance tests, allow us to guarantee maximum performance durability, reliability and safety.



homogenizer
type FBF037

Applications.



homogenizer
type FBF008


Dairy, Food Processing and Ice Cream Industries.

Stability, uniformity, long shelf-life, digestibility, improved appearance, enhanced flavour.

These are just some of the main benefits obtained using a homogenizer in the treatment of common food products. The results, both from a qualitative and economic standpoint, make the new technology offered by FBF ITALIA especially advantageous.

This is a list of just some of the applications in which homogenization may be utilized:

Additives	Milk
Baby foods	Condensed milk
Spices	Almond milk
Puddings	Rice milk
Caseinates	Soy milk
Fruit concentrates	Milk for yoghurt
Tomato concentrate	Reconstituted milk
Cream cheese	Milk-based liquors
Cream for ice cream	Egg-based liquors
Desserts	Honey
Milky liquids	Butter oil
Gelatin	Vegetable oils
Gum arabic	Cream - Clotted cream
Animal fats	Milk proteins
Vegetable fats	Sauces
Ketchup	Syrups
Eggs	Tomato juice
Yoghurt	Fruit pulp and juices



Here is a list of some products from the cosmetic, chemical, pharmaceutical and petrochemical industries that may be homogenized:

Adhesives
Starches
Antibiotics
Cellulose and derivatives
Waxes
Colorants
Cosmetics
Beauty creams
Toothpaste
Detergents
Emulsifying disinfectants
Emulsions
Greases
Inks
Latex
Liposome suspensions
Lotions
Shoe polish
Emulsifiable oils
Lubricating oils
Pigments
Perfumes
Proteins
Resins
Soaps
Syrups
Paints
Vitamins.

Cosmetic, Chemical, Pharmaceutical and Petrochemical Industries.

When used in the cosmetic industry, homogenization provides more stable, uniform emulsions with higher performance characteristics.

In the pharmaceutical industry, the primarily mechanical nature of the homogenization process provides direct access to enzymes, proteins, liposomes and intracellular active substances without having to utilize chemical lysis of the membrane.

Other effects are seen in the preparation of stable solutions of products with different physical characteristics (proteins, creams, solutions of active principles, oils, vitamins).

The increase in the surface area of the micronized particles is also of interest to the chemical and petrochemical industries because of the resulting enhancement of transformation reactions.

This also creates further advantages, such as:

- noticeable reduction of catalysing substances
- intensification of pigment colour
- enhanced use and reduced quantity of additives
- viscosity control of finished products

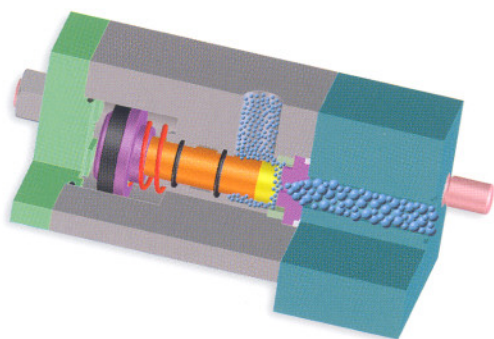
Crushing of active principle particles generates an increase in surface area, thus enhancing preparation assimilation.

The homogenizing principle.

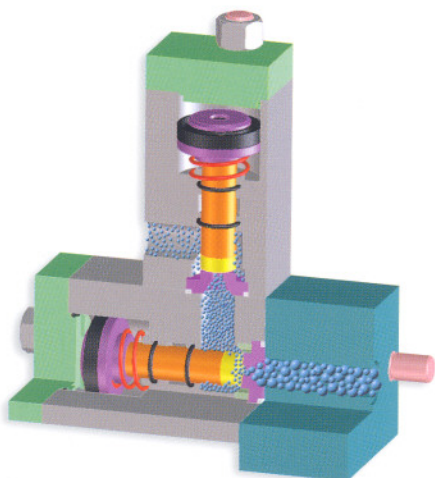
In order to permanently mix one or more substances in a liquid, a homogenizer must be used that makes it possible to micronize and disperse the suspended particles in the fluid, rendering it highly stable even during successive treatments and storage.

The product reaches the homogenizing valve at low speed and at high pressure (the result of the small space between the passage head and the impact head). As it passes, it is subject to various forces that cause the micronization of the particles: violent acceleration followed by immediate deceleration causes cavitation with explosion of the globules, intense turbulence together with high-frequency vibrations, impact deriving from the laminar passage between the homogenizing valve surfaces and consequent collision with the impact ring.

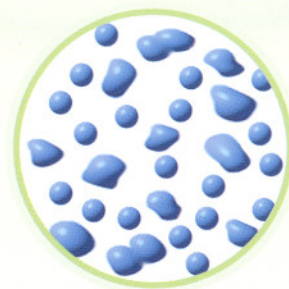
Homogenization can occur with the use of a single homogenizing valve (suitable for dispersion treatment), or double valves (recommended for use with emulsions and for viscosity control when requested). To guarantee problem-free, precise functioning, the homogenizing valves are servoassisted from a special hydropneumatic unit.



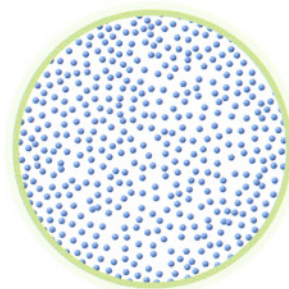
Single phase homogenization phase valve.



Double phase homogenization phase valve.



1



2

Non-homogenized (1)
and homogenized (2) product seen

Components of "Millennium Series" homogenizers.

Frame

The frame has been designed to guarantee optimum internal hygiene of the machine, thanks to its open structure of completely closed box section tube. The robust framework is fully covered by removable satin-finish stainless steel panels.

Pump unit

The pump unit, often overlooked during maintenance because it is enclosed within the frame, is the component on which the working life of the entire machine often depends. The high quality of the materials employed, precision engineering and design for use under demanding conditions are its guarantee over time.

Transmission

The transmission of power from the electric motor to the crankshaft incorporates two reduction phases, each with its own distinct characteristics. The first reduction stage is a pair of V-belt pulleys, while the second utilizes a parallel-axis reduction gearbox. These combine to provide a smooth, play-free, reliable transmission with very low noise levels and low-cost easy maintenance.

Compression head

The compression head is built with steel blocks to our own specifications. Each is forged and checked using ultrasound technology. The heads can use pumping pistons of differing diameters to adjust a machine's capacity, at reduced cost. Special guide rings control the reciprocating motion of the bearing pistons, which are hard chrome, tungsten carbide or all-ceramic coated. This means that the seats of the pumping pistons are spared this task, thus assuring a longer working life.

Homogenizing valve

Thanks to our years of experience, our homogenizing valves guarantee a high standard of homogenization and treated product dispersion. All homogenizing valves in this new line are servo-assisted by a special hydraulic unit designed to provide a constant pressure and absorb any kickback. In addition, it has a maximum pressure (or safety) valve designed to prevent irregular or dangerous overpressure situations during the homogenization phase.

Assembly

Stringent production & quality controls, thorough research into materials and component design, combine to give high reliability, durability, low noise and easy maintenance. These are all features of the Millennium Series.

Millennium Series homogenizers.

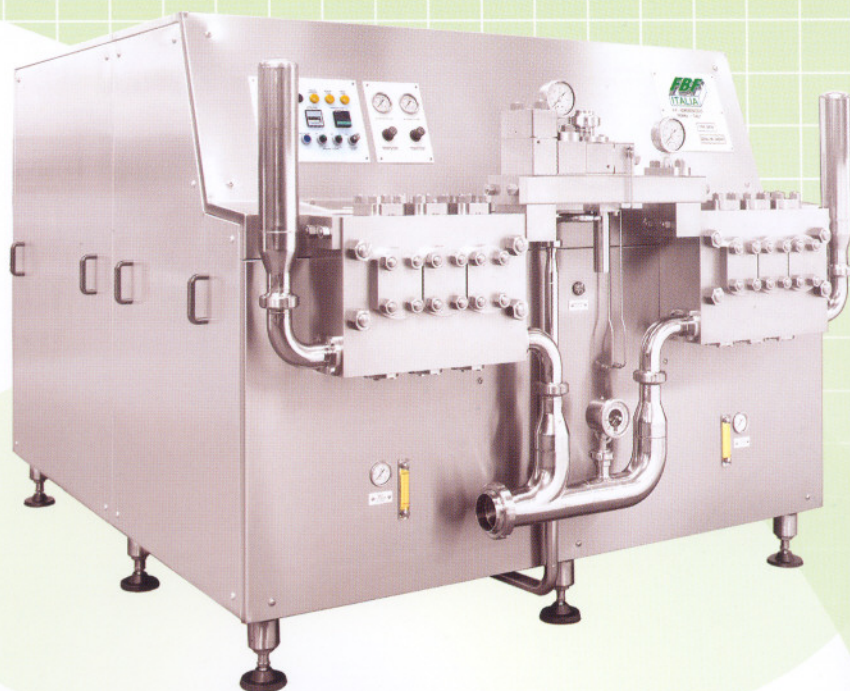
Millennium Series homogenizers conform to CE standards and are available with output capacities ranging from 50 to 50,000 litres per hour, with homogenization pressures up to 2,000 bar.

Models choices include:

- * Sanitary.
- * Aseptic, for UHT installations.
- * Two-stage homogenization.
- * Standard, for processing products such as milk, yoghurt, cream, etc.
- * Abrasive, for processing products such as fruit, ice cream, ketchup, etc.

Several options are available to fully customized machines for specific needs, including:

- * Electrical system for operation at a fixed capacity.
- * Electrical systems for duties requiring variable flowrates.
- * Electrical system for use at two fixed capacities
- * Partial automation of the machine for control either manually or by a control system.
- * Pulsation compensators on the product inlet and outlet.
- * Pressure transducer with digital display of homogenization pressure.
- * Partial homogenization systems.
- * Automatic homogenization pressure cutout, to protect the machine from in-feed errors.



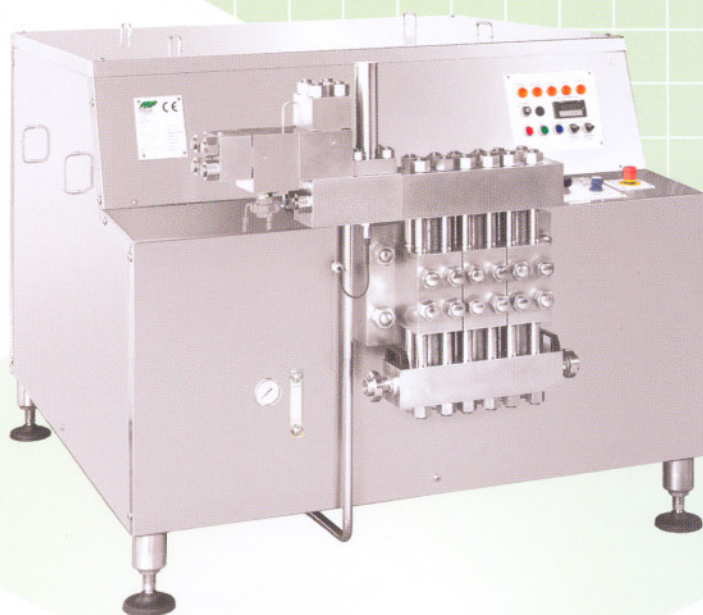
Millennium Series homogenizer table.

Capacity	130 bar		150 bar		180 bar		200 bar		230 bar		250 bar	
(lph)	(Model - kW)		(Model - kW)		(Model - kW)		(Model - kW)		(Model - kW)		(Model - kW)	
100	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2
150	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2
200	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2
250	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF003	3	FBF003	3
300	FBF001	2,2	FBF001	2,2	FBF001	2,2	FBF003	3	FBF003	3	FBF004	4
400	FBF003	3	FBF003	3	FBF003	3	FBF004	4	FBF004	4	FBF005	5,5
500	FBF003	3	FBF004	4	FBF004	4	FBF007	5,5	FBF007	5,5	FBF007	5,5
600	FBF004	4	FBF004	4	FBF005	5,5	FBF007	5,5	FBF007	5,5	FBF007	5,5
800	FBF007	5,5	FBF007	5,5	FBF007	5,5	FBF007	5,5	FBF008	7,5	FBF008	7,5
1.000	FBF007	5,5	FBF007	5,5	FBF008	7,5	FBF008	7,5	FBF010	9,2	FBF010	9,2
1.100	FBF007	5,5	FBF007	5,5	FBF008	7,5	FBF008	7,5	FBF010	9,2	FBF010	9,2
1.200	FBF007	5,5	FBF008	7,5	FBF008	7,5	FBF010	9,2	FBF010	9,2	FBF011	11
1.500	FBF008	7,5	FBF008	7,5	FBF010	9,2	FBF011	11	FBF015	15	FBF015	15
2.000	FBF010	9,2	FBF011	11	FBF015	15	FBF015	15	FBF015	15	FBF018	18,5
2.500	FBF015	15	FBF015	15	FBF015	15	FBF015	15	FBF018	18,5	FBF022	22
3.000	FBF015	15	FBF015	15	FBF018	18,5	FBF018	18,5	FBF022	22	FBF030	30
3.500	FBF015	15	FBF018	18,5	FBF022	22	FBF025	25	FBF030	30	FBF030	30
4.000	FBF018	18,5	FBF018	18,5	FBF025	22	FBF030	30	FBF030	30	FBF037	37
4.500	FBF018	18,5	FBF022	22	FBF030	30	FBF030	30	FBF037	37	FBF037	37
5.000	FBF022	22	FBF030	30	FBF030	30	FBF037	37	FBF037	37	FBF045	45
5.500	FBF025	22	FBF030	30	FBF030	30	FBF037	37	FBF045	45	FBF047	45
6.000	FBF030	30	FBF030	30	FBF037	37	FBF037	37	FBF045	45	FBF055	55
6.500	FBF030	30	FBF030	30	FBF037	37	FBF045	45	FBF055	55	FBF055	55
7.000	FBF030	30	FBF037	37	FBF045	45	FBF045	45	FBF055	55	FBF055	55
7.500	FBF030	30	FBF037	37	FBF045	45	FBF047	45	FBF055	55	FBF075	75
8.000	FBF037	37	FBF037	37	FBF047	45	FBF055	55	FBF075	75	FBF075	75
9.000	FBF037	37	FBF045	45	FBF055	55	FBF055	55	FBF075	75	FBF075	75
10.000	FBF045	45	FBF055	55	FBF055	55	FBF075	75	FBF075	75	FBF090	90
11.000	FBF047	45	FBF055	55	FBF075	75	FBF075	75	FBF090	90	FBF090	90
12.000	FBF055	55	FBF055	55	FBF075	75	FBF075	75	FBF090	90	FBF110	110
13.000	FBF055	55	FBF075	75	FBF075	75	FBF090	90	FBF110	110	FBF110	110
14.000	FBF055	55	FBF075	75	FBF090	90	FBF090	90	FBF110	110	FBF110	110
15.000	FBF075	75	FBF075	75	FBF090	90	FBF110	110	FBF110	110	FBF130	132
16.000	FBF075	75	FBF075	75	FBF090	90	FBF110	110	FBF132	132	FBF132	132
18.000	FBF075	75	FBF090	90	FBF110	110	FBF110	110	FBF132	132	FBF160	160
20.000	FBF090	90	FBF110	110	FBF110	110	FBF132	132	FBF160	160	FBF170	160
22.000	FBF090	90	FBF110	110	FBF132	132	FBF160	160	FBF160	160	FBF200	200
24.000	FBF110	110	FBF110	110	FBF132	132	FBF160	160	FBF200	200	FBF200	200
25.000	FBF110	110	FBF132	132	FBF160	160	FBF160	160	FBF200	200	FBF200	200
26.000	FBF110	110	FBF132	132	FBF160	160	FBF160	160	FBF200	200	FBF200	200
28.000	FBF130	132	FBF132	132	FBF160	160	FBF200	200	FBF200	200	FBF250	250
30.000	FBF132	132	FBF160	160	FBF200	200	FBF200	200	FBF250	250	FBF250	250
32.000	FBF132	132	FBF160	160	FBF200	200	FBF200	200	FBF250	250	FBF250	250
34.000	FBF160	160	FBF170	160	FBF200	200	FBF250	250				
36.000	FBF160	160	FBF200	200	FBF200	200	FBF250	250				
40.000	FBF170	160	FBF200	200	FBF250	250						
45.000	FBF200	200	FBF250	250								
50.000	FBF200	200	FBF250	250								

- homogenization pressures given refer to actual machine working pressures.
- for higher homogenization pressures (from 300 to 2,000 bar), please contact our engineering/sales service.

Ultra-high pressure homogenizers.

The Millennium Series ultra-high pressure homogenizers are the result of lengthy in-depth research and experimentation in this specific field. The special materials and innovative engineering methods utilized on these machines, make it possible to run continuous cycles with homogenization pressures of up to 2,000 bar. These machines may be used in all fields requiring extremely high micronization standards, either in the area of Research & Development or during normal production, including novel products, typically unstable emulsions and cell rupturing.



Laboratory homogenizers.

FBF Homolab is a laboratory homogenizer that can handle about 10 litres of product per hour, with homogenization pressures up to 1,500 bar.

The FBF ITALIA laboratory homogenizer is equipped with two pumping pistons. This important feature results in far greater product stability and more reliable results than can be expected from single piston machines. Options include single and two-stage homogenisation valves.

This makes it possible to closely replicate the same homogenization conditions in the laboratory, as can be expected in the real production process.



Dosing systems.

FBF ITALIA dosing systems comprise of one or more piston-type positive displacement pumps, normally one for each ingredient. The systems continuously proportion and blend separate ingredients to produce the finish product. Each pump is equipped with a frequency converter for the control and regulation of each ingredient. This allows fast product changeover, flexibility, reduced storage and cost saving. Unlike other equipment available on the market, FBF ITALIA dosing systems are not affected by the mass or viscosity of most ingredient products. They provide excellent results. Optional devices include smoothing or homogenizing heads, pressure gauges with alarm contacts.

Positive displacement pumps.

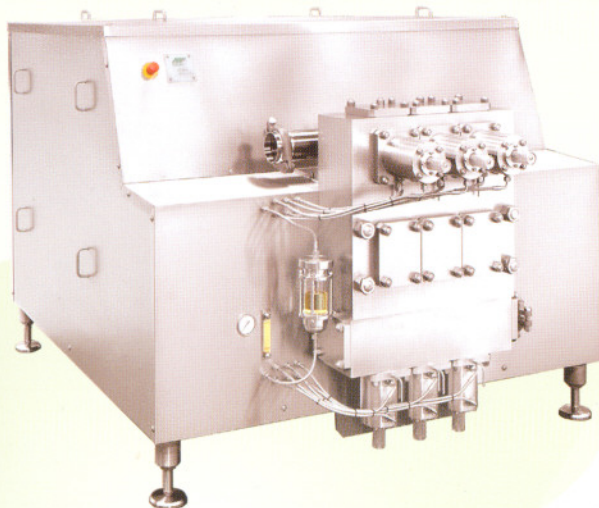
FBF ITALIA positive displacement pumps are structurally very similar to the high-pressure homogenizers and manufactured to the same high quality standards.

From the outside, the positive displacement pumps differ from the homogenizers, because they lack the homogenization unit, instead they include a manifold. The positive displacement pump range is too large to include a performance table here. Please contact our customer service department for further information.

Positive displacement pumps for products containing particles.

These pumps are mainly used for the positive-displacement pumping of products that contain particles, such as pieces of tomato, vegetable or fruit. In soups, yoghurts, jams, etc ... even in the presence of particularly high counter-pressures (typically 50 bar or higher).

The construction of the positive-displacement pumps is much the same as the homogenizers, except for the compression head which is equipped with special pneumatically controlled valve groups. These valves are equipped with actuators, which are controlled by an electronic angular positioner to assure perfect functioning of each valve. The angular positioner allows the opening and closing phases of each individual group of valves to be independently adjusted. The ability of the pump to operate at low speeds, combined with the specially designed passages in the pneumatic controlled valves, gives low velocities and very gentle handling; maintaining the specific characteristics of the most delicate of products.



H.P. Homogenizers



FBF ITALIA SRL - Via Are, 2
43038 Sala Baganza
(PARMA) - Italy
Phone: +39 0521 548211
Fax: +39 0521 835179
www.fbfitalia.it
info@fbfitalia.it



Gillain & Co nv/sa

HYGIENIC EQUIPMENT FOR FOOD & LIFE SCIENCES
Boomsesteenweg 85
B-2630 Aartselaar - Belgium
T: +32 (0)3 870 60 80 - F: +32 (0)3 870 60 89
advice@gillain.be
www.gillain.be
BTW/TVA BE 404 958 073