The FBF HOMOGENIZERS are compliant to CE regulation and are available with capacities from 16 to 60,000 LPH, with homogenizing pressure till 21,800 psi.

**HOMOGENIZATION**

The homogenizer is often necessary to mix one or more substances within a liquid. This device allows to **micronize and scatter the particles suspended in the fluid**, so that the product becomes highly stable, no matter the followings treatments and stockings the products may undergo.

The following picture summarizes the main phases. The product arrives to the homogenizing valve at a low speed and at high pressure (caused by the little gap between the passing head and collision head). During the passage the product is subjected to numerous forces which cause the particles micronization: a violent acceleration followed by an immediate deceleration that produces cavitation and then the globules explosion, a strong turbulence with high frequency vibrations, a collision cutting strengths derived from the laminar passage between the homogenizing valve surfaces and the following impact with the collision ring.

The homogenizing phase can be carried out using a single homogenizing valve (suitable for scatter treatment), or a double homogenizing valve (suggested when you have to use emulsions and for controlling viscosity whenever requested.) All homogenizing valves models are equipped with specific oleo pneumatic unit, to assure a simple and accurate functioning.
FBF ITALIA AT A GLANCE

FBF Italia is a leader manufacturer which designs and manufactures high-pressure homogenizers, laboratory homogenizers, and positive displacement pumps.

Established in 1987, FBF Italia has a remarkable experience in the field. The company is now a point of reference for engineering companies, plant manufacturers and final users, in dairy, food, beverage, chemical, and pharmaceutical industries. In addition, it has a well-established commercial/spare parts/assistance network all over the world including United States and Canada. To date, they have manufactured more than 4,700 units and served 125 countries in the world.

SERVICE & MAINTENANCE

FBF Italia’s focus is to guarantee the customer all necessary support for both sales and post-sales stages. The company can count on a first-class technical assistance network, with highly qualified and expert technicians, available to assist with their machines from start-up to maintenance. Technical and Field Services for the United States and Canada can be accomplished remotely or through one of our specialized field technicians based on customer need and actual situation. Based on long-term experience and hundreds of field installations worldwide, homogenizers and positive displacement piston pumps, can be integrated quickly and efficiently. The design of the machines, engineered and assembled by a highly prepared technical staff, allow for a quick and easy integration of every homogenizer into all processing lines, including PLC controls.

Ease of operation is one of the major focus of the equipment. This concept also applies to maintenance. The units are designed based on simple and intuitive operations. This allows the operator to easily interface with the units for standard scheduled or preventive maintenance. In order to emphasize the importance of a regular scheduled maintenance program, ensure perfect performance and the maximum longevity of each unit, the most suitable maintenance program for each machine is detailed in the operating manual.

CERTIFICATIONS

The Homogenizers and Pumps are manufactured to assure a long working life, to reduce the replacement of the wear parts, and to reduce their maintenance time and costs. FBF Italia’s product quality verification system is based upon strict checks carried out throughout the whole production cycle. All mechanical components of homogenizers and pumps are manufactured with high quality certified materials such as special steels, composite steels, stainless steels, and special plastics. Specific checks are carried out on all machine’s components which are verified on a sample basis and checked on both a mechanical and dimensional standpoint. On the biggest metal components which bear the mechanical stress when working at high pressure, are carried out X-ray scanning to verify the complete integrity of the part and the absence of metal internal and external impurities/imperfections that could compromise the mechanical behavior during machine operation. All the parts coming in contact with product are made with materials compliant to 3A certification. These parts are carefully inspected to allow easy washing and cleaning operations even through CIP or other sterilizing systems. CE and certifications of mechanical and electrical performance are issued to guarantee product’s reliability and best performance. The last testing stage requires for every machine to be submitted to the Factory Acceptance Test to verify full compliance to the customer specifications.
LABORATORY HOMOGENIZERS

LAB HOMOGENIZER 2.20
- 5.28 gph (50 Hz), 6.34 gph (60 Hz)
- Double homogenizing stage
- 1\textsuperscript{st} stage adjustable up to 26,106 psi (150 Mpa)
- 2\textsuperscript{nd} stage adjustable up to 2,176 psi (15 Mpa)
- Nr. 2 pumping pistons

LAB HOMOGENIZER 2.50
- 13.20 gph (50 Hz), 15.32 gph (60 Hz)
- Double homogenizing stage
- 1\textsuperscript{st} stage adjustable up to 8,702 bar (60 Mpa)
- 2\textsuperscript{nd} stage adjustable up to 2,176 psi (15 Mpa)
- Nr. 2 pumping pistons

Compression head and homogenizing valves
- The compression head is manufactured from a single block of high quality stainless steel
- Suction and discharge valves (ball type) manufactured in zirconium oxide
- Replaceable seats for valves in food-grade tungsten Carbide
- Safety valve of spring type
- Pressure gauge of digital type
- Pressurizable stainless steel hopper, complete with connection for compressed air inlet, suitable to treat products with viscosity up to 2,000 cPs.
- Homogenizing valves made in food grade tungsten Carbide
- 2\textsuperscript{nd} Homogenizing stage, suitable to work with pressure up to 2,175 psi (15 MPa);

Pump body, transmission and structure
- The pump body is made from a premium grade high resistance cast iron
- The crankshaft is machined from a solid piece, nitried and checked using ultrasounds
- Lubricating plant of oil splash type. The mechanical organs are in oil-bath.
- The frame is constructed from a square-section stainless steel pipe, provided with removable stainless steel panels with satin finish.
- Electrical motors of leading Company in alternate current.
- Control panel with operation and check buttons
- Electrical system designed in compliance to IEC standards, placed on the machine, with direct start
Laboratory Homogenizer 2.20 and Laboratory Homogenizer 2.50 are laboratory homogenizers designed for easy installation (no need of water for cooling of pistons) and use (manual adjustment of homogenizing pressure via knob).

The decision to equip these homogenizers with two pistons is very important to attain the same results that can be attained with bigger machines used in an industrial process.

The machine is complete with double homogenizing stage and with pressurizable hopper (with capacity of 0.21 or 0.42 gallons); the only option is the hopper with a jacket for hot water (hot water must be supplied on site).

Features and Performance:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Lab Homogenizer 2.20 (26,106 psi)</th>
<th>Laboratory Homogenizer 2.50 (8,702 psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity (50/60 Hz)</td>
<td>5.28/6.34 gph</td>
<td>13.20/15.32 gph</td>
</tr>
<tr>
<td>Max. Pressure (1&lt;sup&gt;st&lt;/sup&gt; and 2&lt;sup&gt;nd&lt;/sup&gt; Stage)</td>
<td>26,106/2,175 psi</td>
<td>8,702/2,175 psi</td>
</tr>
<tr>
<td>Max. size of particles</td>
<td>0.00787 in</td>
<td>0.0197 in</td>
</tr>
<tr>
<td>Hopper Capacity</td>
<td>0.21/0.42 gallons</td>
<td>0.21/0.42 gallons</td>
</tr>
<tr>
<td>Electric Motor</td>
<td>1,5 KW, 6P, 3F</td>
<td>1, 5 KW, 6P, 3F</td>
</tr>
<tr>
<td>Net Weight</td>
<td>242.5 lbs</td>
<td>254 lbs</td>
</tr>
</tbody>
</table>
Microlab 400: THE PERFECT HOMOGENIZER FOR ICE CREAM SMALL BATCH PRODUCTION

The homogenizers play a primary role in the industrial production of the ice cream, but they are often too expensive, far oversized and not so easy to be used when it comes to non-industrial small batch duties.

With a flow rate of 106 gph and a working pressure of 1,740 Bar our MICROLAB 400 perfectly suits the small batch applications. It could be used in two ways: with a single pasteurizer (recirculation mode) or with two pasteurizers (in line installation between the two pasteurizers).

The objective of the homogenizing process is a positive effect on the ice cream’s taste and flavour, furthermore it make the ice cream more creamy and with a less cold feeling. The ice cream, thanks to the homogenizing process, will benefit of a longer overrun, a higher storage stability, a better dissolution and an increased digestibility.

How the MICROLAB 400 works

The pumping pistons push the product trough the homogenizing valve at a pressure of 1,740 psi. Into the homogenizing valve, due to a quick increase of the speed (up to a 9,300 cm/sec), a strong cavitation and due to the friction among the cells, the product is subject to a micronization process which reduces the average diameter of the solid fat particles to a few micrometers in diameter (< 0.0035 mm). The micronization process removes the fat cell’s external coating, increases the area in contact with the emulsifiers, favors the water-oil phase, makes the ice cream texture more soft and gives a dry taste which makes the ice cream a quality product.
Use of the MICROLAB 400 with a single pasteurizer (recirculation mode)

Once the product in the pasteurizer reaches the temperature of 50°C and the sugar has been fully dissolved, the homogenizer starts recirculating the batch in a loop (5 times approx), to make sure the ice cream is fully homogenized. The recommended process time is calculated by the following formula: batch size in litre divided by 1.33 (i.e a batch of 30 litres will required 23 minutes of recirculation process).

Use of the MICROLAB 400 with two pasteurizers (in line installation)

When the product in the first pasteurizer reaches the pasteurization temperature of 85-90°C, then the homogenizer transfers the product into the second pasteurizer to carry out the cooling phase.

Technical Features:
- Flow Rate: 106 gph
- Working Pressure: 1,740 psi
- Pumping Pistons: 2
- Net Weight: 264 lbs
- Dimensions: 17.71 x 19.29 x 30.31 in

Included Equipment:
- Suction filter, lubricant oil, set of seal kit, O&MM.

Optional Equipment:
- Food grade hose c/w fittings.
**Compression head and homogenizing valve**

- The compression block is manufactured from a single block of high quality stainless steel of a special type, checked with ultrasounds against cracking and defects (5 years guarantee). This part has modular compartments for an easy and fast maintenance.
- Each valve assembly is housed within an individually inspected special AISI 316 stainless steel block.
- Pumping Pistons manufactured with a rear cooling chamber, a double guide to keep a perfect alignment, and a special “Diamond Like Carbon” coating (as a standard).
- Valve group assemblies have replaceable seats and hemispherical valve shutters, ideal for processing a variety of products.
- Homogenizing valves designed to be energy efficient, with high stability and alignment of the moving parts (i.e. impact head) due to the hydrodynamic assembly, which ensures a vibration free homogenization.

**Motorization - Structure**

- The Pump body is made from a thick walled, premium grade high-resistance cast iron, engineered to bear heavy loads and cancel out vibration.
- The crankshaft is made from a special forged steel, is obtained from a solid piece and is subjected to "multi-step" heat treatments, superfinishing of the crankpin and nitriding. This part is checked by ultrasounds. The crankshaft is supported by five robust roller bearings (with bronze bearings used only on the crankpins).
- Power transmission with double reduction stage: “V” belts/pulleys, with semi-automatic tensioning system, with two helicoidal gears integrated in the pump body (slow gear coupled directly on the crankshaft).
- Pressurized type lubricating system with the level of the oil detected by a sensor. Oil is cooled off by a tubular heat exchanger.
- Oil cooling system with irregular pressure signal and alarm for high temperature.
- The lubrication system also provides a driven filtering of all possible impurity. For the best thermal balance/dissipation all transmission components are oil splashed.
- 3 phase, 4 poles, AC electric driven motor of leading manufacturer.
- The frame is made of powder painted, carbonated steel square tube, supplied with removable stainless steel panels with satin finishing.
Standard options:

- 2nd stage homogenizing valve controlled by a special oil-pneumatic system
- Fixed capacity (external stainless steel box for electrical system, with soft-starter equipment)
- Variable Capacity (remote stainless steel cabinet; A/C unit with 200/250 kW at 380/460V and with all at 200/240V)
- Aseptic Version with “steril barriers” traced with steam condensate created by an integrated system
- Pulsation dampeners on product inlet and/or outlet connections, available also for aseptic version
- Digital pressure transducers and analogue gauges with 4-20 mA output
- Pressure gauge with alarm contacts for automatic cut-off of the homogenizing pressure, complete with timer to manage homogenizing valves start/stop
- Automatic homogenizing pressure control

Functional Features:

<table>
<thead>
<tr>
<th>Psi</th>
<th>1,450</th>
<th>1,885</th>
<th>2,175</th>
<th>2,610</th>
<th>2,900</th>
<th>3,335</th>
<th>3,625</th>
<th>4,351</th>
</tr>
</thead>
<tbody>
<tr>
<td>FROM (gph)</td>
<td>11,095</td>
<td>10,566</td>
<td>8,981</td>
<td>7,397</td>
<td>6,868</td>
<td>6,340</td>
<td>5,811</td>
<td>4,755</td>
</tr>
<tr>
<td>TO (gph)</td>
<td>17,435</td>
<td>16,378</td>
<td>14,265</td>
<td>11,887</td>
<td>10,566</td>
<td>9,246</td>
<td>8,453</td>
<td>7,132</td>
</tr>
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</table>

Technical Features:

<table>
<thead>
<tr>
<th>0160</th>
<th>KW</th>
<th>160</th>
</tr>
</thead>
<tbody>
<tr>
<td>0200</td>
<td>KW</td>
<td>200</td>
</tr>
<tr>
<td>0250</td>
<td>KW</td>
<td>250</td>
</tr>
<tr>
<td>Pumping Pistons</td>
<td>N.</td>
<td>5</td>
</tr>
<tr>
<td>Water Consumption</td>
<td>gph</td>
<td>47-63</td>
</tr>
<tr>
<td>Weight</td>
<td>lbs</td>
<td>14,484-16,094</td>
</tr>
<tr>
<td>Dimensions (LxDxH)</td>
<td>in</td>
<td>79x103x71</td>
</tr>
</tbody>
</table>
**Compression head and Homogenizing valve**

- The compression block is manufactured from a single block of high quality stainless steel of a special type, checked with ultrasounds against cracking and defects (5 years guarantee). This part has modular compartments for an easy and fast maintenance.
- Pumping Pistons are coated with a special “Diamond Like Carbon” plating (as a standard).
- Interchangeable Valve group assemblies available in special materials depending on the products to be processed.
- The homogenizing valves are designed to be energy efficient, with high stability and alignment of the moving parts (i.e. impact head) due to the hydrodynamic assembly, which ensures a vibration free homogenization.
- Spring type overpressure safety valve is made in sanitary execution, with replaceable shutter and seat.

**Motorization**

- The power end is made of a thick walled, premium grade high-resistance cast iron, engineered to withstand heavy loads and cancel out vibration.
- The crankshaft is made from a special forged steel, machined from a solid piece, “multi-step” heat treatments, superfinishing of the goosenecks and complete nitriding, is checked using ultrasounds. The crankshaft is supported by 5 robust roller bearings (with bronze bearings used only on the crank pins).
- Power transmission with a double reduction stage: “V” belts/pulleys, with parallel axes reduction gear.
- 3 phase, 4 poles, AC electric driven motor of leading manufacturer.
- Oil-splash type lubricating system. The mechanical components are in oil-splashed and the correct oil level can be checked by a proper inspection compartment installed on the front side of the machine.
Standard options

- 2nd stage homogenizing valve controlled by a special oil-pneumatic system
- Variable Capacity (A stainless steel panel mounted directly above the machine)
- Fixed Capacity (internal electrical board)
- Aseptic Version with “steril barriers” traced with steam condensate created by an integrated system
- Pulsation dampeners on product inlet and/or outlet connections, available also for aseptic version
- Digital pressure transducers and analogue gauges with 4-20 ma output
- Pressure gauge with alarm contacts for automatic cut-off of the homogenizing pressure, complete with timer to manage homogenizing valves start/stop
- Automatic homogenizing pressure controller

Technical Features:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1002</td>
<td>2,2</td>
<td>2</td>
<td>23 x 34 x 31</td>
<td>16</td>
<td>375</td>
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<tr>
<td>2003</td>
<td>3</td>
<td>2</td>
<td>34 X 46 X 92</td>
<td>16</td>
<td>794</td>
</tr>
<tr>
<td>2004</td>
<td>4</td>
<td>2</td>
<td>34 X 46 X 92</td>
<td>16.3</td>
<td>805</td>
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<tr>
<td>3006</td>
<td>5.5</td>
<td>3</td>
<td>34 X 46 X 92</td>
<td>18.5</td>
<td>904</td>
</tr>
<tr>
<td>3008</td>
<td>7.5</td>
<td>3</td>
<td>34 X 46 X 92</td>
<td>18.5</td>
<td>926</td>
</tr>
<tr>
<td>3011</td>
<td>11</td>
<td>3</td>
<td>40 X 52 X 40</td>
<td>18.5</td>
<td>926</td>
</tr>
</tbody>
</table>
Compression head and homogenizing valve

- The compression block is manufactured from a single block of high quality stainless steel of a special type, checked with ultrasounds against cracking and defects (5 years guarantee). This part has modular compartments for an easy and fast maintenance
- The pumping pistons are coated with special “Diamond Like Carbon” plating (standard)
- The valve group assemblies have replaceable seats and hemispherical valve shutters, making them ideal for processing a wide range of products
- The Homogenizing valves are designed to be energy efficient, with high stability and alignment of the moving parts (i.e. impact head) due to the hydrodynamic assembly, which ensures a vibration free homogenization
- Spring type overpressure safety valve is made in sanitary execution, with replaceable shutter and seat

Motorization – Structure

- The power end is made of a thick walled, premium grade high-resistance cast iron, engineered to withstand heavy loads and cancel out vibration
- The crankshaft is made from a special forged steel, machined from a solid piece, “multi-step” heat treatments, superfinishing of the goosenecks and complete nitriding, is checked using ultrasounds. The crankshaft is supported by 5 robust roller bearings (with bronze bearings used only on the crank pins)
- Power transmission with a double reduction stage: “V” belts with reduction gear with parallel axes from a leading manufacturer (eliminating the need for water cooling)
- 3 phase, 4 poles, AC electric drive motor supplied by a leading manufacturer
- Lubricating plant of pressurized type. The correct oil level is checked by a proper inspection window installed on the front compartment
- The lubrication system also provides a driven filtering of all possible impurity. For the best thermal balance/dissipation all transmission components are oil splashed.
- The frame is made of powder painted, carbonated steel square tubes, supplied with removable stainless steel panels with satin finishing

Maintenance kit

- Initial set of spare parts supplied with the machine include the following: full set of seals, a set of springs for valves and a complete safety valve set
- Set of tools for normal maintenance
- Lubrication oil (pump body and gearbox)
- Instruction and maintenance manuals (2 copies + CD ROM
Technical Features:

<table>
<thead>
<tr>
<th>Power (KW)</th>
<th>4011</th>
<th>4015</th>
<th>4018</th>
<th>4022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
<td>15</td>
<td>18.5</td>
<td>22</td>
</tr>
<tr>
<td>Pumping Pistons N.</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Consumption gph</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight lbs</td>
<td>1,764-1,874</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x D x H)</td>
<td>46x55x47</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Standard options:

- 2nd stage homogenizing valve controlled by a special oil-pneumatic system
- Variable Capacity (A stainless steel panel mounted directly above the machine)
- Fixed Capacity (internal electrical board)
- Aseptic Version with “steril barriers” traced with steam condensate created by an integrated system
- Pulsation dampeners on product inlet and/or outlet connections, available also for aseptic version
- Digital pressure transducers and analogue gauges with 4-20 ma output
- Pressure gauge with alarm contacts for automatic cut-off of the homogenizing pressure, complete with timer to manage homogenizing valves start/stop
- Automatic homogenizing pressure controller

Functional Features:

<table>
<thead>
<tr>
<th>Psi</th>
<th>1,450</th>
<th>1,885</th>
<th>2,175</th>
<th>2,610</th>
<th>2,900</th>
<th>3,335</th>
<th>3,625</th>
<th>4,351</th>
</tr>
</thead>
<tbody>
<tr>
<td>From (gph)</td>
<td>581</td>
<td>581</td>
<td>581</td>
<td>475</td>
<td>449</td>
<td>343</td>
<td>343</td>
<td>291</td>
</tr>
<tr>
<td>To (gph)</td>
<td>1,585</td>
<td>1,188</td>
<td>1,056</td>
<td>924</td>
<td>792</td>
<td>660</td>
<td>528</td>
<td>528</td>
</tr>
</tbody>
</table>
Compression head and homogenizing valve

- The compression block is manufactured from a single block of high quality stainless steel of a special type, checked with ultrasounds against cracking and defects (5 years guarantee). This part is modular for an easy and fast maintenance.
- Each valve assembly is housed within an individually inspected special AISI 316 stainless steel block.
- Pumping Pistons are manufactured with a rear cooling chamber, a double guide to keep a perfect alignment, and a special “Diamond Like Carbon” coating (standard).
- Valve group assemblies have replaceable seats and hemispherical valve shutters, ideal for processing a very wide range of products.
- The Homogenizing valves are designed to be energy efficient, with high stability and alignment of the moving parts (i.e. impact head) due to the hydrodynamic assembly, which ensures a vibration free homogenization.
- Overpressure safety valve, in sanitary execution, of spring type with replaceable shutter and seat.

Motorization - Structure

- The power end is made of a thick walled, premium grade high-resistance cast iron, engineered to withstand heavy loads and cancel out vibration.
- The crankshaft is made from a special forged steel, machined from a solid piece, “multi-step” heat treatments, superfinishing of the goosenecks and complete nitriding, is checked using ultrasounds. The crankshaft is supported by 5 robust roller bearings (with bronze bearings used only on the crank pins).
- Power transmission with double reduction stage: “V” belts/pulleys, with semi-automatic tensioning system, with two helicoidal gears within the pump body (slow gear coupled directly on the crankshaft).
- Pressurized type lubricating system with the level of the oil detected by a sensor. Oil is cooled off by a tubular heat exchanger.
- The lubrication system also provides a driven filtering of all possible impurity. For the best thermal balance/dissipation all transmission components are oil splashed.
- 3 phase, 4 poles, AC electric driven motor of leading manufacturer.
- The frame is made of powder painted, carbonated steel square tubes, supplied with removable stainless steel panels with satin finishing.

Maintenance kit

- Initial set of spare parts supplied with the machine include the following full sets: seals, valves springs, overpressure safety valve.
- Set of tools for normal maintenance.
- Lubrication oil (pump body and gearbox).
- Instruction and maintenance manuals (2 copies And CD ROM).
### Technical Features:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5018</td>
<td>KW</td>
<td>18.5</td>
</tr>
<tr>
<td>5022</td>
<td>KW</td>
<td>22</td>
</tr>
<tr>
<td>5030</td>
<td>KW</td>
<td>30</td>
</tr>
<tr>
<td>Pumping Pistons</td>
<td>Nr.</td>
<td>3</td>
</tr>
<tr>
<td>Water Consumption</td>
<td>gph</td>
<td>24-32</td>
</tr>
<tr>
<td>Weight</td>
<td>lbs</td>
<td>2645-2800</td>
</tr>
<tr>
<td>Dimensions (L x D x H)</td>
<td>in</td>
<td>47x61x51</td>
</tr>
</tbody>
</table>

### Standard options

- 2nd stage homogenizing valve controlled by a special oil-pneumatic system
- Variable Capacity (A stainless steel panel mounted directly above the machine)
- Fixed Capacity (internal electrical board)
- Aseptic Version with “steril barriers” traced with steam condensate created by an integrated system
- Pulsation dampeners on product inlet and/or outlet connections, available also for aseptic version
- Digital pressure transducers and analogue gauges with 4-20 ma output
- Pressure gauge with alarm contacts for automatic cut-off of the homogenizing pressure, complete with timer to manage homogenizing valves start/stop
- Automatic homogeniing pressure controller

### Functional Features:

<table>
<thead>
<tr>
<th>Psi</th>
<th>1,450</th>
<th>1,885</th>
<th>2,175</th>
<th>2,610</th>
<th>2,900</th>
<th>3,335</th>
<th>3,625</th>
<th>4,351</th>
</tr>
</thead>
<tbody>
<tr>
<td>From (gph)</td>
<td>-</td>
<td>1,242</td>
<td>1,110</td>
<td>977</td>
<td>845</td>
<td>713</td>
<td>581</td>
<td>581</td>
</tr>
<tr>
<td>To (gph)</td>
<td>-</td>
<td>1,585</td>
<td>1,585</td>
<td>1,321</td>
<td>1,189</td>
<td>1,057</td>
<td>925</td>
<td>793</td>
</tr>
</tbody>
</table>
Compression head and Homogenizing valve

- The compression block is manufactured from a single block of high quality stainless steel of a special type, checked with ultrasounds against cracking and defects (5 years guarantee). This part is modular for an easy and fast maintenance.
- Each valve assembly is housed within an individually inspected special AISI 316 stainless steel block.
- Pumping Pistons are manufactured with a rear cooling chamber, a double guide to keep a perfect alignment, and a special “Diamond Like Carbon” coating (standard).
- Valve group assemblies have replaceable seats and hemispherical valve shutters, ideal for processing a very wide range of products.
- The Homogenizing valves are designed to be energy efficient, with high stability and alignment of the moving parts (i.e. impact head) due to the hydrodynamic assembly, which ensures a vibration free homogenization.
- Overpressure safety valve, in sanitary execution, of spring type with replaceable shutter and seat.

Motorization – Structure

- The power end is made of a thick walled, premium grade high-resistance cast iron, engineered to withstand heavy loads and cancel out vibration.
- The crankshaft is made from a special forged steel, machined from a solid piece, “multi-step” heat treatments, superfinishing of the goosenecks and complete nitriding, is checked using ultrasounds. The crankshaft is supported by 5 robust roller bearings (with bronze bearings used only on the crank pins).
- Power transmission with double reduction stage: “V” belts/pulleys, with semi-automatic tensioning system, with two helicoidal gears within the pump body (slow gear coupled directly on the crankshaft).
- Pressurized type lubricating system with the level of the oil detected by a sensor. Oil is cooled off by a tubular heat exchanger.
- The lubrication system also provides a driven filtering of all possible impurity. For the best thermal balance/dissipation all transmission components are oil splashed.
- 3 phase, 4 poles, AC electric driven motor of leading manufacturer.
- The frame is made of powder painted, carbonated steel square tubes, supplied with removable stainless steel panels with satin finishing.

Maintenance kit

- Initial set of spare parts supplied with the machine include the following: full set of gaskets, a set of springs for valves and a complete safety valve set.
- Set of tools for ordinary maintenance.
- Lubrication oil Instruction and maintenance manuals (2 copies + CD ROM).
Technical Features:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6030</td>
<td>KW</td>
<td>30</td>
</tr>
<tr>
<td>6037</td>
<td>KW</td>
<td>37</td>
</tr>
<tr>
<td>6045</td>
<td>KW</td>
<td>45</td>
</tr>
<tr>
<td>Pumping</td>
<td>Nr.</td>
<td>3</td>
</tr>
<tr>
<td>Pistons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Consumption</td>
<td>gph</td>
<td>24-32</td>
</tr>
<tr>
<td>Weight</td>
<td>lbs</td>
<td>3,858-4,079</td>
</tr>
<tr>
<td>Dimensions</td>
<td>in</td>
<td>53x75x55</td>
</tr>
</tbody>
</table>

Standard options

- 2nd stage homogenizing valve controlled by a special oil-pneumatic system
- Variable Capacity (A stainless steel panel mounted directly above the machine)
- Fixed Capacity (internal electrical board)
- Aseptic Version with “steril barriers” traced with steam condensate created by an integrated system
- Pulsation dampeners on product inlet and/or outlet connections, available also for aseptic version
- Digital pressure transducers and analogue gauges with 4-20 ma output
- Pressure gauge with alarm contacts for automatic cut-off of the homogenizing pressure, complete with timer to manage homogenizing valves start/stop
- Automatic homogenizing pressure controller

Functional Features:

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Psi</td>
<td>1,450</td>
<td>1,885</td>
<td>2,175</td>
<td>2,610</td>
<td>2,900</td>
<td>3,335</td>
</tr>
<tr>
<td>From (gph)</td>
<td>1,638</td>
<td>1,638</td>
<td>1,638</td>
<td>1,374</td>
<td>1,242</td>
<td>1,110</td>
</tr>
<tr>
<td>To (gph)</td>
<td>3,038</td>
<td>2,642</td>
<td>2,483</td>
<td>1,981</td>
<td>1,849</td>
<td>1,585</td>
</tr>
</tbody>
</table>
Compression head and homogenizing valve

- The compression block is manufactured from a single block of high quality stainless steel of a special type, checked with ultrasounds against cracking and defects (5 years guarantee). This part is modular for an easy and fast maintenance.
- Each valve assembly is housed within an individually inspected special AISI 316 stainless steel block.
- Pumping Pistons are manufactured with a rear cooling chamber, a double guide to keep a perfect alignment, and a special "Diamond Like Carbon" coating (standard).
- Valve group assemblies have replaceable seats and hemispherical valve shutters, ideal for processing a very wide range of products.
- The Homogenizing valves are designed to be energy efficient, with high stability and alignment of the moving parts (i.e. impact head) due to the hydrodynamic assembly, which ensures a vibration free homogenization.
- Overpressure safety valve, in sanitary execution, of spring type with replaceable shutter and seat.

Motorization – Structure

- The Pump body is made from a thick walled premium grade high-resistance cast iron, engineered to withstand heavy loads and cancel out vibration.
- The crankshaft is made from a special forged steel, machined from a solid piece, “multi-step” heat treatments, superfinishing of the goosenecks and complete nitriding, is checked using ultrasounds. The crankshaft is supported by 5 robust roller bearings (with bronze bearings used only on the crank pins).
- Power transmission with double reduction stage: “Y” belts/pulleys, with semi-automatic tensioning system, with two helicoidal gears within the pump body (slow gear coupled directly on the crankshaft).
- Pressurized type lubricating system with the level of the oil detected by a sensor. Oil is cooled off by a tubular heat exchanger.
- The lubrication system also provides a driven filtering of all possible impurity. For the best thermal balance/dissipation all transmission components are oil splashed.
- 3 phase, 4 poles, AC electric driven motor of leading Company.
- The frame is made of powder painted, carbonated steel square tubes, supplied with removable stainless steel panels with satin finishing.

Maintenance kit

- Initial set of spare parts supplied with the machine include the following: full set of gaskets, a set of springs for valves and a complete safety valve set.
- Set of tools for ordinary maintenance.
- Lubrication oil.
- Instruction and maintenance manuals (2 copies + CD ROM).
### Technical Features:

<table>
<thead>
<tr>
<th>Pumping Pistons Nr.</th>
<th>KW</th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>7045</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7055</td>
<td></td>
<td>55</td>
</tr>
<tr>
<td>7075</td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>7090</td>
<td></td>
<td>90</td>
</tr>
<tr>
<td>Water Consumption gph</td>
<td></td>
<td>24-32</td>
</tr>
<tr>
<td>Weight lbs</td>
<td>5.313-5,622</td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x D x H)</td>
<td>59x83x59</td>
<td></td>
</tr>
</tbody>
</table>

### Standard options

- 2nd stage homogenizing valve controlled by a special oil-pneumatic system.
- Digital pressure transducers and analogue gauges with 4-20 mA output
- Fixed Capacity (remote stainless steel panel, with soft-starter)
- Variable Capacity (remote stainless steel panel).
- Aseptic Version with “steril barriers” traced with steam condensate created by an integrated system
- Pulsation dampeners on product inlet and/or outlet connections, available also for aseptic version
- Pressure gauge with alarm contacts for the automatic cut-off of the homogenizing pressure, complete with timing device to manage the start/stop of the homogenizing valves
- Automatic homogenization pressure controller.

### Functional Features:

<table>
<thead>
<tr>
<th>Psi</th>
<th>1,450</th>
<th>1,885</th>
<th>2,175</th>
<th>2,610</th>
<th>2,900</th>
<th>3,335</th>
<th>3,625</th>
<th>4,351</th>
</tr>
</thead>
<tbody>
<tr>
<td>From (gph)</td>
<td>3,170</td>
<td>2,774</td>
<td>2,510</td>
<td>2,113</td>
<td>1,981</td>
<td>1,638</td>
<td>1,532</td>
<td>1,321</td>
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<tr>
<td>To (gph)</td>
<td>4,227</td>
<td>4,227</td>
<td>4,095</td>
<td>3,170</td>
<td>3,170</td>
<td>2,642</td>
<td>2,510</td>
<td>2,113</td>
</tr>
</tbody>
</table>
Compression head and Homogenizing valve

- The compression block is manufactured from a single block of high quality stainless steel of a special type, checked with ultrasounds against cracking and defects (5 years guarantee). This part is modular for an easy and fast maintenance.
- Each valve assembly is housed within an individually inspected special AISI 316 stainless steel block.
- Pumping Pistons are manufactured with a rear cooling chamber, a double guide to keep a perfect alignment, and a special “Diamond Like Carbon” coating (standard).
- Valve group assemblies have replaceable seats and hemispherical valve shutters, ideal for processing a very wide range of products.
- The Homogenizing valves are designed to be energy efficient, with high stability and alignment of the moving parts (i.e. impact head) due to the hydrodynamic assembly, which ensures a vibration free homogenization.
- Overpressure safety valve, in sanitary execution, of spring type with replaceable shutter and seat.

Motorization – Structure

- The Pump body is made from a thick walled premium grade high-resistance cast iron, engineered to withstand heavy loads and cancel out vibration.
- The crankshaft is made from a special forged steel, machined from a solid piece, “multi-step” heat treatments, superfinishing of the goosenecks and complete nitriding, is checked using ultrasounds. The crankshaft is supported by 5 robust roller bearings (with bronze bearings used only on the crank pins).
- Power transmission with double reduction stage: “V” belts/pulleys, with semi-automatic tensioning system, with two helicoidal gears within the pump body (slow gear coupled directly on the crankshaft).
- Pressurized type lubricating system with the level of the oil detected by a sensor. Oil is cooled off by a tubular heat exchanger.
- The lubrication system also provides a driven filtering of all possible impurity. For the best thermal balance/dissipation all transmission components are oil splashed.
- 3 phase, 4 poles, AC electric drive motor of leading Company.
- The frame is made of powder painted, carbonated steel square tubes, supplied with removable stainless steel panels with satin finishing.

Maintenance kit

- Initial set of spare parts supplied with the machine include the following: full set of gaskets, a set of springs for valves and a complete safety valve set.
- Set of tools for ordinary maintenance.
- Lubrication oil Instruction and maintenance manuals (2 copies + CD ROM).
### Technical Features:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>8075</td>
<td>KW</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>8090</td>
<td>KW</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>8110</td>
<td>KW</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>8132</td>
<td>KW</td>
<td>132</td>
</tr>
<tr>
<td>Pumping</td>
<td>Nr.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pistons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water Consumption</td>
<td>gph</td>
<td>24-32</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>lbs</td>
<td>7,121-7,716</td>
</tr>
<tr>
<td>Dimensions</td>
<td>(L x D x H)</td>
<td>in</td>
<td>71x87x63</td>
</tr>
</tbody>
</table>

### Standard options

- 2\textsuperscript{nd} stage homogenizing valve controlled by a special oil-pneumatic system.
- Digital pressure transducers and analogue gauges with 4-20 mA output
- Fixed capacity (internal electrical system at 380/460V for all the powers and 75 kW at 200/240V; external, stainless steel made with softstarter equipment for 200/240V at 90 kW and over)
- Variable Capacity (remote stainless steel cabinet; A/C unit with 110/132 kW only at 200/240V)
- Aseptic Version with “steril barriers” traced with steam condensate created by an integrated system
- Pulsation dampeners on product inlet and/or outlet connections, available also for aseptic version
- Pressure gauge with alarm contacts for the automatic cut-off of the homogenizing pressure, complete with timing device to manage the start/stop of the homogenizing valves
- Automatic homogenization pressure controller

### Functional Features:

<table>
<thead>
<tr>
<th></th>
<th>1,450</th>
<th>1,885</th>
<th>2,175</th>
<th>2,610</th>
<th>2,900</th>
<th>3,335</th>
<th>3,625</th>
<th>4,351</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From (gph)</td>
<td>4,358</td>
<td>4,358</td>
<td>4,226</td>
<td>3,302</td>
<td>3,302</td>
<td>2,774</td>
<td>2,642</td>
<td>2,245</td>
</tr>
<tr>
<td>To (gph)</td>
<td>6,604</td>
<td>6,604</td>
<td>6,472</td>
<td>5,283</td>
<td>4,755</td>
<td>4,226</td>
<td>3,963</td>
<td>3,170</td>
</tr>
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<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumping Pistons</td>
<td>Nr.</td>
<td>3</td>
</tr>
<tr>
<td>Water Consumption</td>
<td>gph</td>
<td>39.63-47.55</td>
</tr>
<tr>
<td>Weight</td>
<td>lbs</td>
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</tr>
<tr>
<td>Dimensions (L x D x H)</td>
<td>in</td>
<td>75x103x71</td>
</tr>
</tbody>
</table>

Standard options

- 2nd stage homogenizing valve controlled by a special oil-pneumatic system.
- Digital pressure transducers and analogue gauges with 4-20 mA output
- Fixed capacity (internal electrical system at 380/460V for all the powers and 75 kW at 200/240V; external, stainless steel made with softstarter equipment for 200/240V at 90 kW and over)
- Variable Capacity (remote stainless steel cabinet; conditioning unit with 110/132 kW only 200/240V)
- Aseptic Version with “steril barriers” traced with steam condensate created by an integrated system
- Pulsation dampeners on product inlet and/or outlet connections, available also for aseptic version
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Functional Features:

<table>
<thead>
<tr>
<th>Bar</th>
<th>1,450</th>
<th>1,885</th>
<th>2,175</th>
<th>2,610</th>
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<td>3,302</td>
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<td>2,642</td>
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<td>4,755</td>
<td>4,226</td>
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<td>3,170</td>
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</tbody>
</table>