CONTENT

Flexible fittings BFM®

FLOWING
Vibration solutions
- Pneumatic ball vibrator
- Pneumatic roller vibrator
- Pneumatic turbine vibrator
- Electric vibrator
- Bin activator
- Bridge breaker hammer

Fluidization solutions
- Fluidization nozzle
- Aeration pad
- Air cannon
- Vibrating bin aerator

Mechanical solutions
- Anti-bridging device - flat bottom
- Anti-bridging device - conical bottom
  - with rotating blade
  - with screw

Specific coatings
- Mirror polishing
- Teflon coating
- Heating and insulation

TEST PLANT - LABORATORY FOR POWDERS

PALAMATIC PROCESS reserves the right to make changes in the design of the facilities listed in this commercial documentation.

Means that the equipment can be installed in ATEX zone.

Means that the equipment is available for testing at PALAMATIC PROCESS.

Means that design and options can be customised.
Flexible Fitting

TO CONNECT UPPER AND LOWER PIPEWORK SECTIONS WITH PERFECT STATIC AND DYNAMIC SEALING

Advantages

- Hygiene: no retention, perfect sealing
- Size: perfectly adjustable
- Pressure resistance: if an explosion occurs, the gasket tightens
- Setting up: no tool needed for disassembly

I

Connections for CIP operations and degassing
Temperature from -40°C to +300°C
Zero-drop permeability
5.5 bar pressure
FDA and food-grade approved according to European Standard EC 1935/2004
Resistance to acids and caustic sodas
Anti-static (explosive environment)

Flexible Fitting

The assembly is composed of two stainless steel tubes and a flexible fitting. Thanks to its design, the flexible fitting BFM™ can be installed and disassembled without any tool in just a few seconds ensuring a perfectly sealed connection.

The flexible fitting can be installed in-line, offset or on oscillating parts.

I

The installation is performed without any tool or with the help of disassembly system. The mounting operation is carried out from the inside, which reinforces the clamping process.

I

Quick and easy installation

4.000 mm flexible fitting
Conical fitting
Offset installation
Stopper flexible fitting

I

Custom made flexible fitting

Download videos & layouts from our website
**Flexible Fitting**

**Types of Fittings**

- **250AS**
- **Kevlar**
- **Camlon**
- **LM4**
- **Seeflex 020**
- **Seeflex 040**
- **Seeflex 400W**
- **Teflex**

### Flexible Fitting Settlemens

<table>
<thead>
<tr>
<th>In-line</th>
<th>Offset</th>
<th>Oscillating</th>
</tr>
</thead>
<tbody>
<tr>
<td>P = 35 mm</td>
<td>T = 52 mm</td>
<td></td>
</tr>
<tr>
<td><strong>Installation gap in mm (Ei)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal Ø in mm</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Flexible Fitting Length Calculation

- **Ei** = **LM** - 10 mm (minimum)
- **EI** = **LM** - 20 mm (minimum)
- **Ei** = **LM** - 40 mm (minimum)

### Installations

- Fitting below butterfly valve with vacuum resistance
- Flexible fitting on vibrating sifter
- Container connection
- Connection between screw conveyor and sifter
- Feeding of large diameter dosing unit
- Tank connection for liquid dosing unit
- Dosing without weighing interference
- Camlon flexible fitting on cement process
- Pneumatic conveying feeding and vacuum resistance
- Flexible fitting on atomizer
- Mounting on oscillating sifter
- Milk powder process

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1. The stainless steel spigots (flanges) have 52 mm (2") long tail. They can be easily cut down or cut on an angle to suit your existing pipework (see installation instructions for more information).
2. When welding spigots, it is important to adjust the space between your pipes. Standard-length flexible connectors will be stocked and hence more easily available, and less expensive comparing with standard lengths.
3. If your application presents a risk of static electricity or implantation in ATEX zone, we recommend connecting the two BFM™ spigots to ground.

---

**Standard Internal Diameters (in mm)**

<table>
<thead>
<tr>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
</tr>
<tr>
<td>150</td>
</tr>
<tr>
<td>200</td>
</tr>
<tr>
<td>250</td>
</tr>
<tr>
<td>300</td>
</tr>
<tr>
<td>350</td>
</tr>
<tr>
<td>400</td>
</tr>
<tr>
<td>450</td>
</tr>
<tr>
<td>500</td>
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<tr>
<td>550</td>
</tr>
<tr>
<td>600</td>
</tr>
<tr>
<td>650</td>
</tr>
</tbody>
</table>

**Standard lengths (LM) (in mm)**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>200</td>
<td>250</td>
</tr>
</tbody>
</table>
What Are Your Flowing Issues?

- Segregation
- Rat hole
- Bridging
- Retention

**POWDER SPECIFIC ASPECTS**

Sticky, oily, low density, with lumps, spreading, arching, abrasive...

PALAMATIC PROCESS has developed a range of equipment to facilitate the flow of materials inside hoppers or silos by providing highly efficient and innovative solutions.

Our Solutions

Vibration

- Pneumatic ball vibrators
- Pneumatic roller vibrators
- Pneumatic turbine vibrators
- Electric vibrators
- Bin activators
- Bridge breaker hammer

Fluidization

- Nozzles
- Aeration pads
- Air cannons
- Vibrating bin aerator

With mechanical action

- Flat bottomed device
- Conical with screw
- Conical with rotating blades

Special coatings

- Mirror polishing
- Teflon coating
- Heating and insulation

www.palamaticprocess.com/powder-machine-flow-connecting

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Pneumatic Vibrator

3 Technologies:
Ball, Roller, Turbine

FACILITATES THE FLOW OF DIFFICULT MATERIALS

Advantages
- Multidirectional vibrations
- No lubrication
- No maintenance
- Explosion proof

These vibrators generate multi-directional vibrations. They are used for emptying silos, intermediate hoppers, activating vibrating trays and tables, sifters and generally speaking to unblock, convey, densify and separate bulk materials and reduce friction.

They are suitable for explosive or humid environments and may also be used outdoor. The frequency and centrifugal force is determined by the working pressure. All our vibrators (ball, roller, or turbine) comply with Machine Directive 2006/42/CE. For activation, a 2/2 solenoid valve and filtered air are required.

Easy mounting, air requisitions:
- clean air, without impurities that may damage the solenoid valves used in the pneumatic vibrator.
- dehumidified, a condensation water separator should be used.
- lubricated

Applications
Material separation, conveying and compacting, unblocking in silos/hoppers/sifters, filters cleaning, to facilitate the flow and eliminate blocking issues. The small size of the pneumatic vibrators allows them to be easily integrated into the manufacturing process.

Technical Specifications
Ball vibrators are composed of an anodized aluminium frame in which a hardened steel ball turns on a wear-resistant hardened steel device. The vibrator produces small amplitude vibration whose frequency and vibration force can be adjusted with the help of the pressure (2 to 6 bar) and the air flow rate.

Operating temperature: from 20 to 120°C

Performances

<table>
<thead>
<tr>
<th>Type</th>
<th>A (MM)</th>
<th>B (MM)</th>
<th>D (MM)</th>
<th>E (MM)</th>
<th>F (MM)</th>
<th>N/O</th>
<th>Frequency (Hertz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>50</td>
<td>86</td>
<td>68</td>
<td>12</td>
<td>20</td>
<td>7</td>
<td>1/8”</td>
</tr>
<tr>
<td>512</td>
<td>65</td>
<td>113</td>
<td>90</td>
<td>16</td>
<td>25</td>
<td>9</td>
<td>1/4”</td>
</tr>
<tr>
<td>516</td>
<td>65</td>
<td>113</td>
<td>90</td>
<td>16</td>
<td>28</td>
<td>9</td>
<td>1/4”</td>
</tr>
<tr>
<td>525</td>
<td>80</td>
<td>128</td>
<td>104</td>
<td>16</td>
<td>33</td>
<td>9</td>
<td>1/4”</td>
</tr>
<tr>
<td>530</td>
<td>100</td>
<td>160</td>
<td>130</td>
<td>20</td>
<td>45</td>
<td>11</td>
<td>1/8”</td>
</tr>
<tr>
<td>536</td>
<td>100</td>
<td>160</td>
<td>130</td>
<td>20</td>
<td>50</td>
<td>11</td>
<td>1/8”</td>
</tr>
</tbody>
</table>

*The data comes from a vibrating bench with springs, perfectly simulating most of the possible applications. The more the structure where the vibrators are applied to is rigid, the greater the frequency and centrifugal force are.

Ball Technology

Download videos & layouts from our website

www.pneumaticprocess.com/pneumatic-machine/connecting-industrial-vibrators
Pneumatic Vibrator

Applications

Pneumatic roller vibrators improve the flow rate of difficult materials into hoppers and other containers.

Technical Specifications

They are made up of an anodized aluminum body with a hardened steel roller on a cast iron run rolling inside. Vibration is generated by a roller making epicyclical movements inside a run manufactured from steel. These vibrators create a very high frequency with low air consumption regarding the force created.

Operating temperature: from 0 to 200°C

Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>IN/OUT</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR 50</td>
<td>50</td>
<td>86</td>
<td>68</td>
<td>12</td>
<td>36</td>
<td>7</td>
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<td>0.370</td>
</tr>
<tr>
<td>TR 65</td>
<td>65</td>
<td>112</td>
<td>90</td>
<td>16</td>
<td>36</td>
<td>9</td>
<td>1/4</td>
<td>0.760</td>
</tr>
<tr>
<td>TR 80</td>
<td>80</td>
<td>128</td>
<td>104</td>
<td>16</td>
<td>40</td>
<td>9</td>
<td>1/4</td>
<td>1.270</td>
</tr>
<tr>
<td>TR 100</td>
<td>100</td>
<td>160</td>
<td>130</td>
<td>20</td>
<td>52</td>
<td>11</td>
<td>1/4 - 3/8</td>
<td>2.600</td>
</tr>
</tbody>
</table>

Performances

- Type A
- Type B
- Type C
- Type D
- Type E
- Type F
- IN/OUT
- Weight (kg)

Performances*

<table>
<thead>
<tr>
<th>Type</th>
<th>Vibration (m/s²)</th>
<th>Maximum Force (N)</th>
<th>Air consumption (m³/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR 50</td>
<td>34,000</td>
<td>38,000</td>
<td>42,000</td>
</tr>
<tr>
<td>TR 65</td>
<td>26,000</td>
<td>33,000</td>
<td>38,000</td>
</tr>
<tr>
<td>TR 80</td>
<td>17,000</td>
<td>23,000</td>
<td>26,000</td>
</tr>
<tr>
<td>TR 100</td>
<td>9,500</td>
<td>15,500</td>
<td>17,500</td>
</tr>
</tbody>
</table>

Pneumatic Turbine Vibrator

Applications

Pneumatic turbine vibrators prevent products from adhering to the sifter or hopper walls and are suitable for food and pharmaceutical industries.

Technical Specifications

The obtained vibrations are generated by a turbine into which weights have been inserted.

Even with low pressure, the amplitude remains significant. Operating temperature: from 20 to 120°C

Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>OUT</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT 5</td>
<td>50</td>
<td>86</td>
<td>68</td>
<td>12</td>
<td>36</td>
<td>7</td>
<td>1/8</td>
<td>0.290</td>
</tr>
<tr>
<td>OT 10</td>
<td>100</td>
<td>160</td>
<td>130</td>
<td>20</td>
<td>52</td>
<td>11</td>
<td>1/4</td>
<td>0.760</td>
</tr>
<tr>
<td>OT 15</td>
<td>150</td>
<td>240</td>
<td>210</td>
<td>25</td>
<td>65</td>
<td>14</td>
<td>1/4</td>
<td>1.270</td>
</tr>
<tr>
<td>OT 20</td>
<td>200</td>
<td>320</td>
<td>290</td>
<td>30</td>
<td>77</td>
<td>11</td>
<td>1/4</td>
<td>2.600</td>
</tr>
</tbody>
</table>

Performances*

<table>
<thead>
<tr>
<th>Type</th>
<th>Vibration (m/s²)</th>
<th>Maximum Force (N)</th>
<th>Air consumption (m³/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT 5</td>
<td>38,000</td>
<td>38,000</td>
<td>42,000</td>
</tr>
<tr>
<td>OT 10</td>
<td>30,000</td>
<td>35,000</td>
<td>38,000</td>
</tr>
<tr>
<td>OT 15</td>
<td>24,000</td>
<td>30,000</td>
<td>35,000</td>
</tr>
<tr>
<td>OT 20</td>
<td>18,000</td>
<td>25,000</td>
<td>21,000</td>
</tr>
<tr>
<td>OT 25</td>
<td>14,500</td>
<td>19,000</td>
<td>23,000</td>
</tr>
<tr>
<td>OT 30</td>
<td>12,000</td>
<td>15,500</td>
<td>17,500</td>
</tr>
<tr>
<td>OT 35</td>
<td>10,000</td>
<td>13,500</td>
<td>15,500</td>
</tr>
<tr>
<td>OT 40</td>
<td>8,500</td>
<td>12,000</td>
<td>12,000</td>
</tr>
<tr>
<td>OT 45</td>
<td>7,000</td>
<td>9,500</td>
<td>8,000</td>
</tr>
</tbody>
</table>

*The data above are used in a vibratory bench with operators perfectly adorning the material applications.

The more the structure where the vibrators are applied is rigid, the greater the frequency and centrifugal force are.
**TO IMPROVE THE EXTRACTION OF DIFFICULT MATERIALS**

The electric vibrators consist of an electric motor, hosted in a robust cast housing with offset weights mounted on both ends of the shaft.

**FUNCTIONS**

External electric vibrators are used to improve the flow of industrial powders: on hoppers and silos to facilitate the discharge of materials or as actuators on vibrating devices in conveying, filtering, compacting or sorting applications.

When the vibrator is started, the rotation of the offset masses causes a sinusoidal centrifugal force. With only one vibrator mounted on a vibrating machine, the rotational force causes circular motion of the machine. Two motovibrators in opposite rotation, mounted in parallel on the same machine, produce a force which causes a linear movement of the machine. The requirement of a circular or linear movement depends on the application.

**SPECIFICATIONS**

- Main body
- Terminal unit
- Cable gland
- Roller bearing flange
- Stator
- Rotor shaft
- Adjustable weights
- Roller bearing

**ADVANTAGES**

- Wide range of centrifugal forces that cover all applications
- Multiple tensions
- FMEA type robust box, premium quality bearings
- ATEX Certification ExII3D and ETL, Class II, Division 2 for hazardous locations

**OPTIONS**

- 2, 4, 6, 8 three-phase poles
- 2 single phase pole
- D.c. motors available

**RANGE OF ELECTRICAL VIBRATORS AND MICROVIBRATORS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Category</th>
<th>Reference</th>
<th>Poles</th>
<th>Vibration force (kg)</th>
<th>Tension (V)</th>
<th>Speed (50Hz / 60Hz m/min)</th>
<th>Power (installed kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-8 poles</td>
<td>MVE</td>
<td>2</td>
<td>66 - 0.75</td>
<td>Triphase from 220V to 690V</td>
<td>3.000 / 3.600</td>
<td>0.04 - 0.17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>25 - 0.153</td>
<td>50Hz or 60Hz</td>
<td>1.500 / 1.800</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>81 - 0.320</td>
<td>3.600</td>
<td>1.000 / 1.200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>105 - 2.489</td>
<td></td>
<td>750 / 900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Micro</td>
<td>MICRO</td>
<td>2</td>
<td>4 - 0.65</td>
<td>Triphase from 230V to 400V</td>
<td>3.000 / 3.600</td>
<td>0.03 / 0.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50Hz or 60Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Single-phase 115V, 60Hz and 230V, 50Hz</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.000 / 3.600</td>
<td>0.08 - 0.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Current</td>
<td>MVE-DC</td>
<td>2</td>
<td>66 - 0.320</td>
<td>50V / 24V</td>
<td>3.000</td>
<td>0.08 - 0.16</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>12V</td>
<td>12V at 24V</td>
<td></td>
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</tr>
<tr>
<td>Enhanced security</td>
<td>MVE-E</td>
<td>2</td>
<td>164 - 0.502</td>
<td>3.000 / 3.600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>254 - 1.513</td>
<td>1.500 / 1.800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>313 - 3.009</td>
<td>1.000 / 1.200</td>
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<td></td>
<td></td>
<td>8</td>
<td>105 - 9.852</td>
<td>750 / 900</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Explosion proof</td>
<td>MVE-D</td>
<td>2</td>
<td>794 - 0.052</td>
<td>3.000 / 3.600</td>
<td>0.35 / 0.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>714 - 0.495</td>
<td>1.500 / 1.800</td>
<td></td>
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<td></td>
<td></td>
<td>6</td>
<td>533 - 4.697</td>
<td>1.000 / 1.200</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>8</td>
<td>179 - 4.782</td>
<td>750 / 900</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milling application</td>
<td>MVE-MILLING</td>
<td>2</td>
<td>1.001 - 0.490</td>
<td>3.000 / 3.600</td>
<td>0.65 / 0.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>770 / 1.364</td>
<td>750 / 900</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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www.palamicprocess.com/powder-machine/downloading/industrial-vibrators
Bin Activator

Flow rates from 5 to 320 m³/h.
Range: diameters from 400 mm to 3,000 mm
Mild steel, stainless steel 304 L, stainless steel 316 L manufacturing

TO FACILITATE THE EXTRACTION OF POWDERS UNDER SILOS

The vibrating bin activator is an extraction device which, through controlled vibration, ensures a continuous flow of the material inside the silos and hoppers. It is made of a weld-free manufacturing steel or stainless steel cone, a flange seal integrated on the bottom and top parts, suspension brackets connected to the silo and one or two electric vibrators.

OPERATING MODE

One or two electric vibrators are mounted on both sides of the main structure and induce a vibration of the entire bottom, without vibrating the silo above it. During extraction, the bin activator performs a circular movement which is transmitted to the material inside the silo and therefore provides a uniform flow.

DIMENSIONS

<table>
<thead>
<tr>
<th>Size in mm</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>Motor</th>
<th>KG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 400</td>
<td>114</td>
<td>380</td>
<td>427</td>
<td>330</td>
<td>1</td>
<td>59</td>
</tr>
<tr>
<td>Ø 750</td>
<td>219</td>
<td>730</td>
<td>609</td>
<td>456</td>
<td>1</td>
<td>99</td>
</tr>
<tr>
<td>Ø 1,250</td>
<td>323</td>
<td>1,480</td>
<td>1,120</td>
<td>774</td>
<td>1</td>
<td>475</td>
</tr>
<tr>
<td>Ø 1,600</td>
<td>323</td>
<td>1,780</td>
<td>1,194</td>
<td>924</td>
<td>2</td>
<td>726</td>
</tr>
<tr>
<td>Ø 2,100</td>
<td>406</td>
<td>2,008</td>
<td>1,420</td>
<td>1,033</td>
<td>2</td>
<td>811</td>
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</tbody>
</table>

TECHNICAL DESCRIPTION

- Deflector
- Flange to weld on silo
- Silent blocks for suspension
- Outlet cone
- Vibrating motor with variable intensity
- Gasket

ADVANTAGES

- Mechanical extraction without air or vibration: no contamination or compaction
- Mounting under the silo with a single flange
- Independent work of the load with a complete emptying of the silo
- Reduced energy consumption, low power
- Tight and silent operation
- Easy settlement: rotating flange, adjustable length, flexible or rigid dosing
- Fast assembly
- Easy adaptation of recovery or transfer module
- Compact, reduced ground clearance of the silo
- Compact and robust construction
- Dosing accuracy regardless of the amount of powder contained in the silo
- 70% less welds than traditional bin activators
- Available in ATEX zone 22
- Seamless cone with increased thickness
- Seals range including a FDA approved food version and a compatibility with high temperature materials

PALAMATIC PROCESS EXAMPLES OF INSTALLATIONS

Available on our website: www.palamaticprocess.com/powder-machine/bin-activator
Download videos & layouts from our website
Bridge Breaker Hammer

Pneumatic Hammer

**ADVANTAGES**
- Mechanical extraction without air or vibration: no contamination or compaction
- Mounting under the silo with a single flange
- Independent work of the load with complete emptying of the silo
- Reduced energy consumption, low power installed
- Compact design with integrated solenoid valve
- High performance
- Easy installation
- Suitable for explosive environments (ATEX compliance)

**TECHNICAL SPECIFICATIONS**
The pneumatic hammer is available in three different sizes and is suitable for explosive environments (ATEX compliance). It works intermittently.

- 3 sizes
- Warranty: 150,000 impacts
- Operating temperature: 20°C to 80°C
- Service pressure: 3 - 6 bar
- Generated energy: 4.2 / 153

**DIMENSIONS IN MM**

<table>
<thead>
<tr>
<th>Type</th>
<th>hoppers thickness ≤3mm</th>
<th>3 bar</th>
<th>6 bar</th>
<th>3 bar</th>
<th>6 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS040l</td>
<td>160 80 302 219</td>
<td>200</td>
<td>95</td>
<td>357</td>
<td>259</td>
</tr>
<tr>
<td>PS040l</td>
<td>250 113 430 308</td>
<td>200</td>
<td>25</td>
<td>336</td>
<td>308</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>hoppers thickness &gt;3mm</th>
<th>3 bar</th>
<th>6 bar</th>
<th>3 bar</th>
<th>6 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS040l</td>
<td>120 20 242 219</td>
<td>200</td>
<td>20</td>
<td>282</td>
<td>259</td>
</tr>
<tr>
<td>PS060l</td>
<td>163 20 282 259</td>
<td>200</td>
<td>25</td>
<td>336</td>
<td>308</td>
</tr>
</tbody>
</table>

**APPLICATIONS**
Pneumatic hammers represent an effective solution against the formation of bridges or rat holes (see diagram p.6). They are particularly suitable for silo cones or existing hoppers. Their action is particularly effective if the powder handled has a tendency to agglomerate under pressure or to stick to the walls. The robust design allows installing a pneumatic hammer outdoor. They are provided with a mounting plate to be welded to the wall of the hopper or silo and with a safety system to prevent accidental slip during installation or maintenance.

**OPERATING MODE**
The pneumatic hammers produce a shock wave generated by the impact of the internal piston on the metallic plate welded to the wall of the hopper or silo. When using several hammers, those at the bottom must be operated first; it must then go gradually up at regular intervals.

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Type</th>
<th>Air consumption</th>
<th>Air connection</th>
<th>Powder</th>
<th>Paking dimensions in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 bar</td>
<td>6 bar</td>
<td>3 bar</td>
<td>6 bar</td>
<td></td>
</tr>
<tr>
<td>PS040l</td>
<td>0.60 1.30</td>
<td>1/8 pipe 8 mm</td>
<td>8.4</td>
<td>18.1</td>
</tr>
<tr>
<td>PS060l</td>
<td>1.17 2.30</td>
<td>1/4 pipe 8 mm</td>
<td>28.8</td>
<td>62</td>
</tr>
<tr>
<td>PS080l</td>
<td>2.30 4.80</td>
<td>1/4 pipe 8 mm</td>
<td>59.2</td>
<td>155</td>
</tr>
</tbody>
</table>

www.palamicprocess.com/powder-machinery/flow-connecting/industrial-vibrators
Download videos & layouts from our website
Fluidization Nozzle

TO KEEP THE PRODUCT IN MOTION DURING LONG PERIODS OF STORAGE

The fluidizing nozzles and plates can easily be implemented in the existing facilities. Suitable arrangements may be made to remove air or dust containing dust.

ADVANTAGES
- Easy setup
- Easy maintenance
- Compact design
- Operating temperature: -20°C to +80°C
- Suitable for cement, lime and similar materials

APPLICATIONS
Fluidization nozzles represent the best solution to ensure the flow of materials inside silos or hoppers.

TECHNICAL SPECIFICATIONS
A polymer shaft, jointly molded with a threaded nozzle (manufactured in brass or polyethylene), has to be screwed to the steel fitting. This steel fitting has to be welded on the outer cone of the silo or hopper before making the connection with the compressed air supply.

The compact size facilitates the installation of fluidization nozzles. The fluidizing nozzles may be used with fine powdery materials, such as cement, lime or plaster with a pressure of 0.2 bar or of 1 bar (14 PSI).

AIR CONSUMPTION

<table>
<thead>
<tr>
<th>Type</th>
<th>Weight</th>
<th>Air consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150 g</td>
<td>0.2 bar (2.9 psi) 1 bar (14 psi)</td>
</tr>
<tr>
<td>Ø125</td>
<td></td>
<td>0.83 0.03</td>
</tr>
<tr>
<td>Ø160</td>
<td></td>
<td>- 30</td>
</tr>
</tbody>
</table>

MOUNTING PRINCIPLE

DIMENSIONS IN MM
Aeration Pad

TO KEEP THE PRODUCT IN MOTION DURING LONG PERIODS OF STORAGE

ADVANTAGES

- Easy setup
- Easy maintenance
- Compact design
- Operating temperature: -20°C to + 80°C
- Suitable for cement, lime and similar materials

APPLICATIONS

Aeration pads are a low cost solution ensuring the flow of pulverulent materials inside silos or hoppers. Aeration or low pressure fluidization prevents the formation of mouse holes, bridges, cloggings and material residues at the bottom of the silo.

The aeration pads are widely used for materials such as cement. They are also suitable for installations with multiple lines alternately supplied (e.g. in storage factories and lime dosing process). In this type of application, the aeration pad is not only used during discharging phase of the silo, but also to keep the material in motion for long periods of storage.

TECHNICAL SPECIFICATIONS

With the semi-convex shape of the gasket of durable polymer, the air is expelled with a wide angle of emission over the whole surface of the white filter. Aeration pads are characterized by a light box, robust and reliable polymer, and by the design of the hanger. An external mounting kit is available for easy mounting.

The working pressure operates up to 0.2 bar (3 PSI).

DIMENSIONS

<table>
<thead>
<tr>
<th>Operating pressure with dehumidified air (depending on material)</th>
<th>Air consumption</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2 bar</td>
<td>0.12 m³/ h ± 0.2 bar</td>
<td>250 g</td>
</tr>
</tbody>
</table>

MOUNTING PRINCIPLE

1.  
2.  
3.
The air cannon is used to avoid the emergence of bridges or stacks. It is ideal for setting in motion dry bulk solids and light irregular shapes (fibers, chips, flakes, wood chips, plastic chips).

**APPLICATIONS**

The air cannon is used to avoid the emergence of bridges or stacks. It is ideal for setting in motion dry bulk solids and light irregular shapes (fibers, chips, flakes, wood chips, plastic chips).

**TECHNICAL SPECIFICATIONS**

The air cannons are designed to inject high pressure gas (air or nitrogen) jets of up to 6 bar (87 PSI) for a short time (usually fractions of a second), resulting in the collapse of bridges and stacks.

In a standard version, the air cannons are activated in electropneumatic way. A fully pneumatic version is available on request.

When using multiple air cannons, those below must be operated first; it must then go gradually up at regular intervals. The curved discharge pipe carries air tangentially along the wall or bottom of the silo (zero impact on the bottom of the silo or structure).

The robust design allows installing the air cannons outdoor. The external parts of the body are made of aluminum and galvanized steel.

They are provided with a mounting plate to be welded to the wall of the hopper or silo and a safety system to prevent accidental slip during installation or maintenance.

The air cannons are available in 3 sizes.

**DIMENSIONS IN MM**

<table>
<thead>
<tr>
<th>Type</th>
<th>D1</th>
<th>D2</th>
</tr>
</thead>
<tbody>
<tr>
<td>FG040</td>
<td>130</td>
<td>220</td>
</tr>
<tr>
<td>FG050</td>
<td>190</td>
<td>260</td>
</tr>
<tr>
<td>FG060</td>
<td>250</td>
<td>308</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Type   | Compression Air connection ((bar) 3 bar) Air connection Kg Packing dimensions in mm |
|--------|---------------------------------------------------------------|-----------------------------------|
| FG040  | 0.60 1.3 1/8 pipe 6 mm | 8.2 | 270 x 185 x 170 |
| FG050  | 1.17 2.3 1/4 pipe 8 mm | 16.2 | 450 x 200 x 220 |
| FG060  | 2.30 4.8 1/4 pipe 8 mm | 28.7 | 450 x 200 x 220 |
Vibrating Bin Aerator

TO KEEP THE PRODUCT IN MOTION DURING LONG PERIODS OF STORAGE

ADVANTAGES

- Easy setup
- Operating pressure from 2 to 6 bar
- Reduced air consumption
- Unique high efficiency design
- Full range of products
- Renewed design
- Robust construction
- Self-cleaning
- Anti-abrasive
- Operating temperature: -40°C à 170°C
- For granular and powder products
- FDA approved

APPLICATIONS

The vibrating bin aerators are used to facilitate the flow of powder products and granules. They combine a fluidizing effect under pressure of 2 to 6 bar and a slight vibration against the wall of your hopper.

TECHNICAL SPECIFICATIONS

In addition to the variety of materials of the membrane, the new design of our vibrating bin aerators improves their performance.

Our vibrating bin aerators can be used with a large variety of powdered materials and meet the constraints of the protection of the environment and the ambient temperature. The operating pressure and reduced air consumption are the main advantages.

An external mounting kit makes our vibrating bin aerators interchangeable with aerators pads that are commonly used in mobile batch stations.

DIMENSIONS IN MM

MOUNTING PRINCIPLE ON HOPPER

AIR CONSUMPTION

<table>
<thead>
<tr>
<th>Type</th>
<th>2 bar L/min</th>
<th>4 bar L/min</th>
<th>6 bar L/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB/VBI</td>
<td>100</td>
<td>150</td>
<td>250</td>
</tr>
<tr>
<td>VBI</td>
<td>100</td>
<td>150</td>
<td>250</td>
</tr>
<tr>
<td>VBM</td>
<td>70</td>
<td>10</td>
<td>120</td>
</tr>
</tbody>
</table>

Vibrating Bin Aerator
FUNCTION
The flat-bottomed anti-bridging device is designed to break up lumps and facilitate the flow of the material. It is used for the extraction and feeding of pneumatic transfer, screw conveyors, rotary valves. It provides mechanical agitation of the material to prevent it from caking during storage or after a grinding phase. It increases the storage volume on a specific height (no slope).

TECHNICAL CHARACTERISTICS
The anti-bridging device, also called extraction system, is entirely mechanical and is fitted with a rotary blade driven by a gear which moves the material to the feeding point while avoiding the formation of bridges. Seals at the shaft passage are particularly neat with braids and deflector. Versions with pressurization are possible. The speed of the anti-bridging device can be adjusted with a frequency converter.
The blade engine is independent (installed power: 1.5 kW - 15 kW IP55).

Mild steel, stainless steel 3841 and 316L manufacturing
Diameters from 400 to 2,000 mm.

Option: the bridge breaker, fitted with crumbling fingers, burst the material lumps against the fixed shaft.

ADVANTAGES
- Mechanical extraction without air or vibration, no contamination or compaction
- Mounting under the silo with a single flange
- Independent work load with complete draining of the silo
- Low installed power
- Tight and silent operation
- Ease of implementation: rotating flange, adjustable length, flexible or rigid dosing
- Fast assembly
- Dosing accuracy regardless of the amount of powder contained in the silo

DIMENSIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø A</th>
<th>Number of stations</th>
<th>Outlet D</th>
<th>H</th>
<th>Blade height</th>
<th>Number of blades in the mix</th>
<th>Power in kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>400</td>
<td>600</td>
<td>800</td>
<td>2</td>
<td>from 15 to 400 mm</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>600</td>
<td>600</td>
<td>800</td>
<td>800</td>
<td>2</td>
<td>from 15 to 400 mm</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>800</td>
<td>800</td>
<td>1,200</td>
<td>800</td>
<td>2</td>
<td>from 15 to 800 mm</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>1,200</td>
<td>1,200</td>
<td>1,600</td>
<td>800</td>
<td>2</td>
<td>from 15 to 800 mm</td>
<td>2 or 4</td>
<td>5.5</td>
</tr>
<tr>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
<td>800</td>
<td>2</td>
<td>from 15 to 800 mm</td>
<td>2 or 4</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Dimensions according to the blended material

TECHNICAL CHARACTERISTICS

- Pressurization of the bearings and air injection (optional)
- Braids for bearing sealing
What Are Your Flowing Issues?

2 PRINCIPLES WITH CONICAL DEVICE

- Segregation
- Rat hole
- Bridging
- Retention

CONICAL SCREW

In order to carry out an extraction of moist and very clogging powders from a cylindrical and conical storage silo, PALAMATIC PROCESS offers a mechanical fluidising system with conical screw. The blade, positioned at the top of the blender ensures the breaking of the sloping and optimizes the useful volume of the hopper. Also, the screw prevents the bulk material from caking and promotes their emptying. The conception and the design of the screw are defined according to the treated powders. The rotational speeds are slow and are less than 1 meter per second at the periphery. This equipment is compatible with "Clean In Place" systems and ATEX certifications.

Advantage: to boost the flow of powders and the feeding of the extraction screw.

ROSS ROTATING BLADES

The anti-bridging devices with rotating blades on conical bottom are specially designed to be clamped on hoppers containing poor flowing powders. The standard cone angle is 60°. It goes with two scraping rotating blades. Its hollow shaft conception with offset geared motor provides full bore of the product at the outlet flange. This design makes possible the implementation of standard maintenance slide or butterfly valve.

Advantages: full bore of the outlet flange.

<table>
<thead>
<tr>
<th>Models</th>
<th>Ø A</th>
<th>Ø B</th>
<th>Power in kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>200</td>
<td>600</td>
<td>2.2</td>
</tr>
<tr>
<td>250</td>
<td>250</td>
<td>600</td>
<td>2.2</td>
</tr>
<tr>
<td>300</td>
<td>300</td>
<td>800</td>
<td>3.3</td>
</tr>
</tbody>
</table>

ANTI-BRIDGING DEVICE WITH ROTATING BLADES DIMENSIONS

www.palamaticprocess.com/powder-machine/anti-bridging-device
Download videos & layouts from our website
MIRROR POLISHING

Mirror polishing is a finish that requires removing off all the defects and to obtain a perfect surface finish. In certain sectors, such as food & feed, cosmetics or fine chemicals industries, polished mirror is a safety requirement. It is to enable perfect cleaning of the walls of their equipment that our customers require a polished mirror finish.

PALAMATIC PROCESS equipment can be supplied with roughness certificates guaranteeing the final Ra. Mechanical polishing of 600 grain is often required to achieve Ra lower than 0.05 microns. Electropolishing can also be suggested.

TEFLON COATING

When one wishes to reduce friction between materials and steel, fluorine resins present outstanding properties:

1. Non-stick coating (Teflon)
2. Low coefficient of friction
3. Good corrosion resistance
4. Chemical resistance
5. Temperature resistance (-200 à +300°C)
6. Electrostatic compatibility

A very high surface tension of fluorinated resins minimizes adhesion. The thicknesses of the standard coatings are generally very thin, between 5 and 20 microns (can rise to 1,000 microns).

This type of coating is applicable to many surfaces:
- steel
- stainless steel
- alloy steel...

HEATING AND INSULATION

Some powders, sensitive to thermal shock or those transferred to rooms with different temperatures can cause clogs. The insulation and heating solution avoids the risk of condensation and also struggles against the sticking of powders.

Heating technologies used:
- plates
- ribbon
- insulation with glass wool or rock wool
Laboratory for Powders

PALAMATIC PROCESS laboratory for powders was built for the use of all our industrial customers wishing to define production machines that will meet their expectations.

Test Plant

Our test center offers the latest machinery existing in the powder handling sector. Specialist engineers are there to advise you on the industrial processes best suited to your requirements and to guide you at every stage of the decision to design the most efficient installation.

Step 1 - Before Test
- Select the likely optimal machine configuration based on your technical requirements (powders, flow rate, dosing)
- Draft test proposal by our sales-engineers representatives

Step 2 - During Test
- Process validation for product testing
- Perform testing and sample collection
- Discussion on results after the test with machines (phase diagram, degradation tests, fines content)

Step 3 - After Test
- Analysis of machine test data and samples
- Write a summary report
- Collaborate on the optimal solution for your requirements
- Submit a quotation

The benefits of mechanical testing

- An individual consultation with and on-going support by our R&D engineers
- Confirmation of the appropriate machines to conduct a test with your product
- Tests at various operating conditions to define the most efficient process according to your industrial requirements
- Evaluation of the profitability of equipment configuration
- Possibility to test additional options using PALAMATIC PROCESS’ range of products
- Maximize the return on your investment
- Maximize the optimum selection of the proper machine
- Capitalize on the wide experience of our experts

- 300 process configurations
- 2,400 sq. feet of surface dedicated to the test
- 35 industrial machines
- 35 feet of ceiling
- Test with all types of products
- 2 support engineers
- ATEX configurations

Handling products

Boric acid, Citric acid, Clay, Glucose, Ammonium nitrate, Barite nitrate, Sodium nitrate, Lampblack, Salt, Sugar, Magnesium Sulphate, Talc, Urea, Sludge, Milk powder...

Tests on an industrial scale & flexibility

The anti-bridging device is available for testing. It may be tested as a separate or integrated equipment under a big bag emptying station, a container or a sack emptying station.

Particle size correspondences

- Maximum Explosion Pressure
- Maximum Explosion Overpressure
- Minimum Ignition Energy
- Lower explosion Limit
- Median value/Granulometry
Our expertise:

- **FILLING SOLUTIONS FOR BIG BAG AND OCTABIN**
  To fill

- **EMPTYING SOLUTIONS FOR BIG BAG AND OCTABIN**
  To empty, compact and massage

- **SACK, DRUM AND CARDBOARD FILLING SOLUTIONS**
  To fill, package, handle

- **SACK AND DRUM EMPTYING SOLUTIONS**
  To empty, compact, handle, discharge

- **SOLUTIONS FOR PNEUMATIC CONVEYING**
  Vacuum, pressure

- **SOLUTIONS FOR MECHANICAL CONVEYING**
  To transfer with screw, belt conveyor, bucket elevator, aeromechanical or vibratory conveyor, truck loading spout

- **CRUMBLING AND GRINDING EQUIPMENT**
  To granulate, crumble, grind, pound, micronise, disagglomerate

- **SIFTING EQUIPMENT**
  To sift, segregate, sieve, protect

- **CONTAINERS AND STORAGE SOLUTIONS**
  To fill, charge, empty, contain

- **DOSING EQUIPMENT**
  To control, regulate, empty, extract

- **MIXING EQUIPMENT**
  To homogenise, incorporate, fluidify, stir, mix

- **FLOW AND CONNECTION**
  To vibrate, fluidise, unclog, drain, facilitate extraction, control the descent, prevent stacks and vaults, connect

- **INDUSTRIAL DUST COLLECTING EQUIPMENT**
  To filter, clean, confine, secure