SCREW FEEDERS

PALAMATIC PROCESS has designed a range of industrial feeders suitable for all your application requirements. With our expertise, we offer you precise dosing equipment, for high, regular or low throughputs, depending on the type of your bulk products.

VOLUMETRIC FEEDER

The volumetric feeder provides accurate feeding of a wide variety of bulk products. The dosing of ingredients is conducted through a dosing screw which conveys the volume of material to feed. The rotation speed can be handled by a frequency inverter. The feeding precision is about 7 to 8%.

WEIGHT FEEDER

The weight feeder enables an automatic feeding of powdery or bulk materials by batch or in continuous process. The feeders are placed on a stable frame with a very efficient weighing system. This system works in gain-in-weight or loss-in-weight mode and provides a metering accuracy of 1%.

Screw Feeder

Volumetric

Capacity: 24 to 6,458 L/h.
Objectives: dosing of any kind of bulk materials

The PALAMATIC PROCESS volumetric screw feeders offer a uniform, constant and controlled feeding of your powders held in a hopper. Thanks to the exchangeable screw design system, our feeders can handle a wide variety of materials with a gentle and precise feeding of free-flowing materials.

<table>
<thead>
<tr>
<th>Models</th>
<th>D10</th>
<th>D11</th>
<th>D12</th>
<th>D12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>24 to 142 L/h.</td>
<td>89 to 523 L/h.</td>
<td>261 to 1,438 L/h.</td>
<td>1,174 to 6,458 L/h.</td>
</tr>
<tr>
<td>Tube ext. Ø in mm</td>
<td>33.7</td>
<td>42.4</td>
<td>76.1</td>
<td>114.3</td>
</tr>
</tbody>
</table>

www.palamaticprocess.com/powder-machine/powder-dosing/feeder/weight

Downloaded videos & layouts from our website
**Advantages**

- **Hygienic design:** allows an easy access to all parts of the feeder to clean, control and disinfect.
- **No mechanical friction on the handled material.**
- **High linear feed.**
- **Agitator ensuring a constant feeding volume.**

**AGITATORS RANGE**

- **Pigtail**
  - Round section spiral without centre pipe
  - Light materials, granular products, PVC, pellets, polymers in pellets.
- **Ribbon**
  - Ribbon spiral on pipe
  - Heavy sticky materials, heavy oxides, clays.
  - With shaft
  - Standard screw
  - Heavy fluid materials, metallic grains.

**COMPLETE SCREWS RANGE**

**PNEUMATIC GATE**

- The pneumatic gate stops the product flow and averts the raise of humidity level.

**FEEDER D10 (size and capacity)**

<table>
<thead>
<tr>
<th>Feeder screws</th>
<th>Application</th>
<th>Gear ratio</th>
<th>Rotation speed</th>
<th>Theoretical throughput</th>
<th>Precision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigtail</td>
<td>Light sticky materials: flour, sugar, cocoa, pellets, granular products, light and slightly sticky oxides</td>
<td>10</td>
<td>138</td>
<td>142</td>
<td>5 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 (Standard)</td>
<td>92</td>
<td>95</td>
<td>5 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>69</td>
<td>71</td>
<td>5 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28</td>
<td>49</td>
<td>51</td>
<td>5 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>35</td>
<td>35</td>
<td>5 g</td>
</tr>
<tr>
<td>Ribbon</td>
<td>Light materials, granular materials, pellets, PVC polymers in pellets</td>
<td>10</td>
<td>138</td>
<td>103</td>
<td>3 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 (Standard)</td>
<td>92</td>
<td>69</td>
<td>3 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>69</td>
<td>51</td>
<td>3 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28</td>
<td>49</td>
<td>37</td>
<td>3 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>35</td>
<td>25</td>
<td>3 g</td>
</tr>
<tr>
<td>With shaft</td>
<td>Heavy fluid materials, metallic granules</td>
<td>10</td>
<td>138</td>
<td>97</td>
<td>1 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 (Standard)</td>
<td>92</td>
<td>64</td>
<td>1 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>69</td>
<td>48</td>
<td>1 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28</td>
<td>49</td>
<td>34</td>
<td>1 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>35</td>
<td>24</td>
<td>1 g</td>
</tr>
</tbody>
</table>

*Accuracy: The accuracy provided for a batch operating process with a metering device fitted with a pneumatically adjustable valve. Flow control is provided by a PALAMATIC PROCESS actuated pump integrating the management of large and small fall velocities. Accuracy may vary depending on the “quality of implementation of the dosing or weighing hopper” (equality of the mechanical and electronic grade).*
Screw Feeder

Technical Layouts

**FEEDER D11 (size and capacity)**

![Diagram of FEEDER D11](image)

**FEEDER D12 (size and capacity)**

![Diagram of FEEDER D12](image)

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### Screw Feeder Technical Layouts

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<table>
<thead>
<tr>
<th>Feeder screws</th>
<th>Application</th>
<th>Gear ratios</th>
<th>Rotation speed (rev./min.)</th>
<th>Theoretical throughput (l./h.)</th>
<th>Precision (g.)</th>
</tr>
</thead>
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<tr>
<td>Pigtail</td>
<td>Light sticky materials: flour, sugar, cocoa, pellets, granular products, light and slightly sticky oxides</td>
<td>10, 15 (standard), 20, 28, 40</td>
<td>138, 92, 69, 49, 35</td>
<td>523, 348, 261, 186, 130</td>
<td>5 g</td>
</tr>
<tr>
<td>Ribbon</td>
<td>Light materials, granular materials, pellets, PVC, polymers in pellets</td>
<td>10, 15 (standard), 20, 28, 40</td>
<td>138, 92, 69, 49, 35</td>
<td>380, 253, 190, 135, 95</td>
<td>3 g</td>
</tr>
<tr>
<td>With shaft</td>
<td>Heavy fluid materials, metallic granules</td>
<td>10, 15 (standard), 20, 28, 40</td>
<td>138, 92, 69, 49, 35</td>
<td>356, 237, 178, 127, 89</td>
<td>1 g</td>
</tr>
</tbody>
</table>

Accuracy: The accuracy provided for a batch operating system with a metering device fitted with a pneumatic quick closing valve. Flow control is provided by a PALAMATIC PRODOSI automated system integrating the management of single fall velocities. Accuracy may vary depending on the "quality of implementation of the dosing or weighing hopper": inequality of the structure and electronic grade.

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<table>
<thead>
<tr>
<th>Feeder screws</th>
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<th>Theoretical throughput (l./h.)</th>
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</thead>
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<tr>
<td>Pigtail</td>
<td>Light sticky materials: flour, sugar, cocoa, pellets, granular products, light and slightly sticky oxides</td>
<td>10, 15 (standard), 20, 28, 40</td>
<td>138, 92, 69, 49, 35</td>
<td>1,438, 959, 719, 513, 359</td>
<td>10 g</td>
</tr>
<tr>
<td>Ribbon</td>
<td>Light materials, granular materials, pellets, PVC, polymers in pellets</td>
<td>10, 15 (standard), 20, 28, 40</td>
<td>138, 92, 69, 49, 35</td>
<td>1,046, 697, 523, 373, 261</td>
<td>5 g</td>
</tr>
<tr>
<td>With shaft</td>
<td>Heavy fluid materials, metallic granules</td>
<td>10, 15 (standard), 20, 28, 40</td>
<td>138, 92, 69, 49, 35</td>
<td>1,273, 848, 636, 454, 318</td>
<td>1 g</td>
</tr>
</tbody>
</table>

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Download layouts from www.palamaticprocess.com
FEEDER D13 (size and capacity)

![Diagram of FEEDER D13](image)

IMPACT OF PARTICLE SIZE

<table>
<thead>
<tr>
<th>Material references</th>
<th>Floor (Type 55)</th>
<th>Sugar (crystal n°2)</th>
<th>Plastic granules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granulometry in μm</td>
<td>100 μm</td>
<td>500 - 700 μm</td>
<td>2 - 5 mm</td>
</tr>
<tr>
<td>Product family</td>
<td>Fine</td>
<td>Crystal</td>
<td>Granules</td>
</tr>
<tr>
<td>Correction factor (feeding rate of the screw)</td>
<td>1.31</td>
<td>0.96</td>
<td>0.91</td>
</tr>
</tbody>
</table>

CALCULATION EXAMPLE OF RATES FOR CALCIUM CARBONATE

- **Product to be metered**: Calcium carbonate
- **Bulk density**: 0.7
- **Granulometry**: 70μm
- **Product family**: Fine
- **Type of coil**: Screw with shaft
- **Correction factor**: 1.31
- **Wished actual flow rate**: 155 L/h.

**Calculation formula**

**Theoretical throughput**

\[
\text{Theoretical throughput} = \frac{\text{Actual flow rate}}{\text{Correction factor}}
\]

\[
= \frac{155}{1.31} = 118 \text{ L/h.}
\]

**Result**

- **Type of feeder**: D11
- **Motor reducing ratio**: 1/28
- **Theoretical throughput**: 127 L/h.

MASS FLOW RATES GRAPH WITH D11 FEEDER (PIGTAIL TYPE SCREW) BASED ON THE 3 FAMILIES

![Mass flow rates graph](image)
**Screw Feeder**

Capacity: 24 to 6,458 L/h.

Objectives: controlled feeding of materials

The batch feeding system guarantees an accurate weighing for each batch (granule or powder). The batch weighing provides a homogeneous and complete control of the product flows, a better accuracy and contributes to processing efficiencies.

There are three types of weight feeders:

- **Weight feeder in loss-in-weight**: it provides the fastest and most accurate measurement and control of individual ingredients fed into a batch process.
- **Gain-in-weight batching**: downstream the feeder, it doses and controls the weighing.
- **Continuous weight feeder**: the feeder enables a continuous feeding by regulating its speed depending on the feeder loss weight to get a constant flow rate.

**Weight Feeder**

**Technical Specifications**

- **Parts in contact with the material**: stainless steel 304 L/316 L
- **Structure and bolts**: stainless steel 304 L/316 L
- **Finishes of flange extremity**: stainless steel 304 L/316 L
- **Base capacity**: 50 to 65 litres

**Options**

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Dosing accuracy < 1%


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**Advantages**

- Sealed flexible connection without weighing interference
- Local weighing display for direct information
**Disassembly and Cleaning**

**RAPID DISASSEMBLY (STANDARD)**

Design allowing rapid disassembly of the feeder to facilitate cleaning phases. The standard design enables dismantling and provides easy access to all parts to perform the manual cleaning.

![Diagram showing parts of the feeder](image)

- Hopper
- Drive unit
- Homogenization drive unit
- Agitator
- Dosing screw
- Front flange
- Dosing valve
- Closing valve of the feeding tube

Design and quick feeder disassembly to facilitate the cleaning steps.

Some applications require frequent cleaning of the feeder either for changes of materials and/or due to constraints of allergens, pigments, etc.

To respond to this industrial issue and in the context of offering sanitary equipment, PALAMATIC PROCESS developed the Easyclean option on its entire range of dosing. This Easyclean option enables quick dismantling of all parts of the dispenser without any use of tools and without supporting loads. This is guaranteed by the integration of rails and rollers on the flanges of the feeder.

Mirror polished finishes that can be integrated for applications in food and cosmetics areas.