

FrymaKoruma

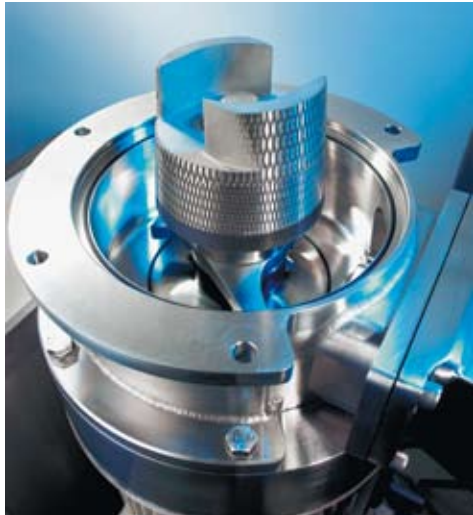


FrymaKoruma Mills

The new standard in milling technology



Perforated disc mill



Toothed colloid mill



Corundum stone mill

The new standard in milling technology

Highly efficient, outstandingly hygienic and extremely versatile – just three of many good reasons to choose FrymaKoruma mills. Used in laboratories and on production lines in many industries, FrymaKoruma mills are suited to a vast range of applications. The portfolio includes perforated disc, toothed colloid and corundum stone mills. Since the milling tools are interchangeable, all mills can be used for a wide range of purposes – precisely adaptable to the products to be processed.

Products are loaded via a hopper that can also be fitted with a feed screw, or via a pump. The milling zone is sealed by an innovative, single or double acting mechanical seal, with no dead space. All product contact surfaces are very easily cleaned with no need for dismantling (CIP). Thanks to optimised residue discharge and thorough washing of all static seals during the cleaning process, compliance with the highest hygiene standards (GMP, DIN EN 1672) is assured. In all industrial sectors, demands in terms of flexibility and hygiene management are constantly on the increase. The latest range of FrymaKoruma mills sets new standards in both areas – with no compromise in throughput.

ML perforated disc mill

Perforated disc mills are used for initial size reduction and pre-milling of bulky products, pulping and mashing of bulky solids (e.g. fruit and vegetables). The knife arm rotates at around 3000 rpm, very close to the perforated disc, processing the product as it is fed in axially. The cutting and impact forces produced reduce size and force the product through the apertures in the disc. Perforated discs are available with a range of aperture sizes. The rotating ejector bar beneath the disc transfers the finished product to the mill outfeed.

- ◆ Fruits and vegetables
- ◆ Fruit juices, vegetable juices
- ◆ Recycling, e.g. paper or leather waste
- ◆ Meat, fish
- ◆ Pet food



Mills

MZ toothed colloid mill

The principal application for toothed colloid mills is wet milling of fluids and high-viscosity suspensions and emulsions. FrymaKoruma mills can be supplied with a range of colloid milling sets, enabling optimal tailoring to each product. The standard milling set is suitable for universal use. The coarse toothed set is ideal for size reduction of solids in suspensions, while the cross-toothed set is used where smaller particle sizes and finer dispersion are required. Adjustment of the milling gap between rotor and stator allows optimal setting for every product, while stepless milling gap adjustment is available as an option for both manual and automatic adjustment. The gap width is indicated on a gauge.

- ◆ Juices
- ◆ Soy milk
- ◆ Hazelnuts
- ◆ Grease
- ◆ Pesticides
- ◆ Paper coatings
- ◆ Paints and varnishes

MK corundum stone mill

Corundum stone mills are used for dispersion and wet milling of liquid, viscous and pasty products. At the heart of these mills are the corundum stones, which are available with various grains to suit demand. The rotor element rotates against the fixed stator at high speed, achieving size reduction of the product in the milling gap through extreme shear and cutting forces. Axial milling gap control also allows adjustment of the pressure between rotor and stator, even during operation (negative gap adjustment). These units can also be fitted with automatic milling gap adjustment as an optional extra.

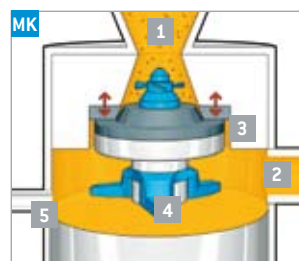
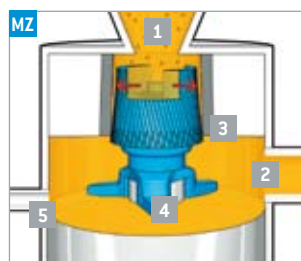
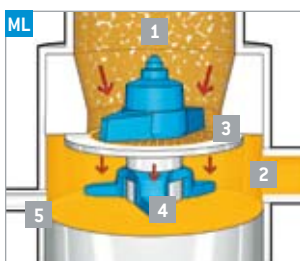
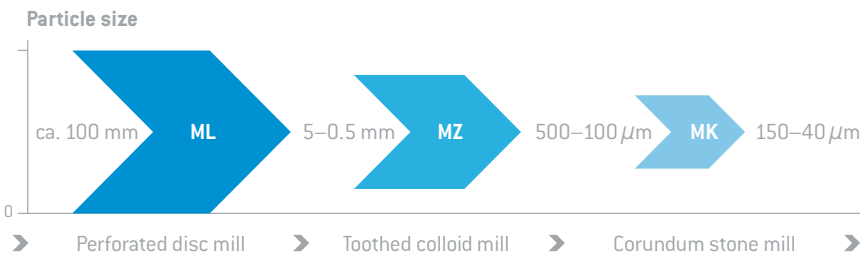
- ◆ Mustard
- ◆ Sesame
- ◆ Pet food
- ◆ Humus
- ◆ Nut pastes, chocolate
- ◆ Make-up, creams
- ◆ Lubrication grease

Key benefits

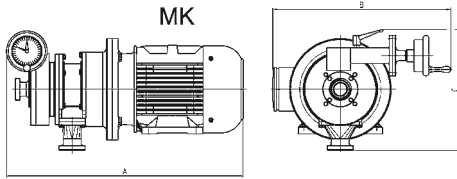
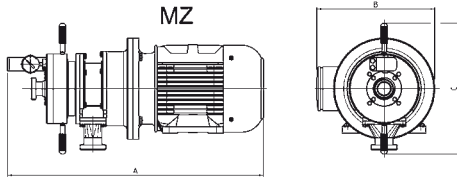
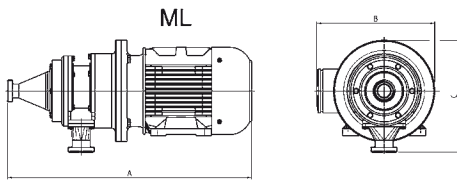
- Innovative grinding technology
- Optimum product chamber design minimizes product loss
- Optimized sealing technology
- Design conforms to GMP
- CIP-compatible
- High energy density with high throughput in the smallest space

Options

- Automatic milling gap adjustment for MK
- Product contacting surfaces. Ra ≤ 0.4 μm (pharma finish)
- Tri-Clamp, flange connections
- Heated/cooled inlets and outlets
- Explosion-proof design (ATEX, EEx e, EEx de)
- Double acting mechanical seal
- Feed pumps, hopper, feed screws
- Conversion kits for all types
- Further options upon request



- 1 Product infeed
- 2 Product discharge
- 3 Grinding gap
- 4 Ejector
- 5 Residue discharge



| | Throughput (l/h), approx. | Installed power (kW) | Dimensions (mm) | | | Weight (kg), approx. |
|---------------|------------------------------|-------------------------|-----------------|-------|--------|----------------------------|
| | | | Length | Width | Height | |
| ML 150 | 200–2500 | 5.5 | 750 | 360 | 330 | 85 |
| ML 180 | 1000–12000 | 15 | 950 | 430 | 450 | 250 |
| ML 250 | 4000–20000 | 30 | 1050 | 450 | 450 | 390 |
| ML 330 | 8000–40000 | 60 | 1310 | 670 | 630 | 500 |

| | | | | | | |
|---------------|------------|-----|------|-----|-----|------|
| MZ 80 | 100–1000 | 5.5 | 680 | 360 | 330 | 100 |
| MZ 100 | 200–2000 | 5.5 | 680 | 360 | 330 | 100 |
| MZ 110 | 300–3000 | 5.5 | 680 | 360 | 330 | 100 |
| MZ 130 | 700–7000 | 15 | 900 | 430 | 450 | 300 |
| MZ 150 | 1500–15000 | 22 | 950 | 430 | 450 | 310 |
| MZ 190 | 2600–26000 | 45 | 1130 | 610 | 510 | 700 |
| MZ 250 | 4000–40000 | 60 | 1330 | 740 | 650 | 1100 |

| | | | | | | |
|---------------|----------|-----|------|-----|------|-----|
| MK 95 | 10–160 | 5.5 | 680 | 540 | 360 | 100 |
| MK 160 | 30–500 | 11 | 1030 | 540 | 620 | 200 |
| MK 180 | 50–1000 | 15 | 1030 | 540 | 620 | 200 |
| MK 250 | 90–2000 | 22 | 830 | 670 | 1000 | 400 |
| MK 300 | 150–3000 | 37 | 830 | 600 | 1220 | 650 |
| MK 320 | 200–5000 | 37 | 830 | 600 | 1220 | 650 |

For over 50 years, FrymaKoruma has been a leading international supplier of innovative process solutions for the pharmaceutical, cosmetic, food and chemical industries. Based in Germany and Switzerland, the company employs 200 people. The company's two principal areas of expertise are in one bowl vacuum processing for liquids and crèmes and in milling and grinding of materials from chemical pigments through to food ingredients. With over 23,000 installations worldwide, FrymaKoruma is undoubtedly the leader in its field, consistently setting the standards to which the market aspires. The company's enviable reputation and continuing success are based on the proven high performance and robustness of its equipment together with a desire to exceed customer expectation and build long term relationships. FrymaKoruma is a Romaco

Group company who since 2001 have been part of the NYSE listed corporation Robbins & Myers, Inc. a leading supplier of highly engineered, critical equipment and systems for global energy, chemical and industrial markets.

Customer support

FrymaKoruma understands that the scope of supply embraces much more than technology. Our team of highly skilled engineers work with you to develop a technical specification that exactly matches your requirements. From initial consultation through to installation and commissioning, FrymaKoruma offer a professional turn key solution.

At ProTec, our process technology center, customers have the opportunity to develop and optimize recipes in a modern laboratory, produce test batch-

es, carry out scale-ups or take part in detailed training courses. Our experienced team of process application technologists can guide customers through the development of everything from liquids to semi-solid products.

Our After Sales Service department, provide a comprehensive range of aftermarket products to ensure high availability and longevity for your equipment. Our team of technicians are able to offer on site maintenance and training to ensure high levels of effectiveness from your equipment. Furthermore, modifications and upgrades to plant which reflect changes in your business can be carried out on site. Our spare parts service is customer-orientated. We provide a high availability of spare parts which are promptly dispatched.

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