



FrymaKoruma CoBall[®]-Mill

Annular gap bead mill for fine milling

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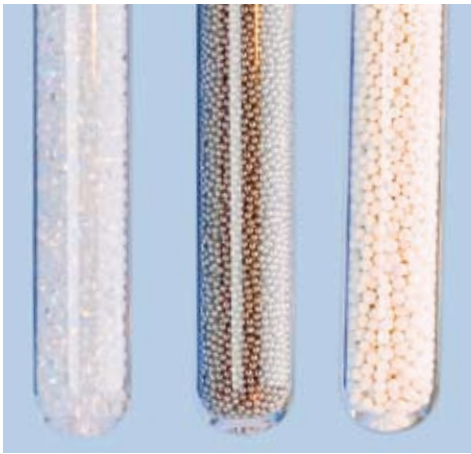
for fine milling

The CoBall®-Mill is used for fine milling of suspensions and high-viscosity products. First-class results are assured, thanks to intelligent design coupled with the application of the latest research in nanotechnology. The CoBall®-Mill is a triumph of engineering, combining FrymaKoruma's years of experience and knowledge with the latest scientific developments. This mill is supremely versatile, satisfying the most demanding quality requirements efficiently and cost-effectively.

The product is fed to the milling chamber by an external variable-flow pump. The milling action is created in the gap between the conical working vessel – the stator – and a conical rotor. The gap is in the range 6.5 to 17 mm depending on the model selected. The movement of the rotor creates radial movement of the grinding media (metal, glass or ceramic beads). Momentum amplifies the outward motion so that the product shear force increases steadily during the milling operation. Milling beads and product are separated at the end of the cycle by a sieve located at the out-feed such that only perfectly milled product with an even particle size is discharged. The beads then rejoin the product flow via a channel and re-enter the milling chamber, thus, continuous circulation is achieved.



Rotor/stator



Grinding media



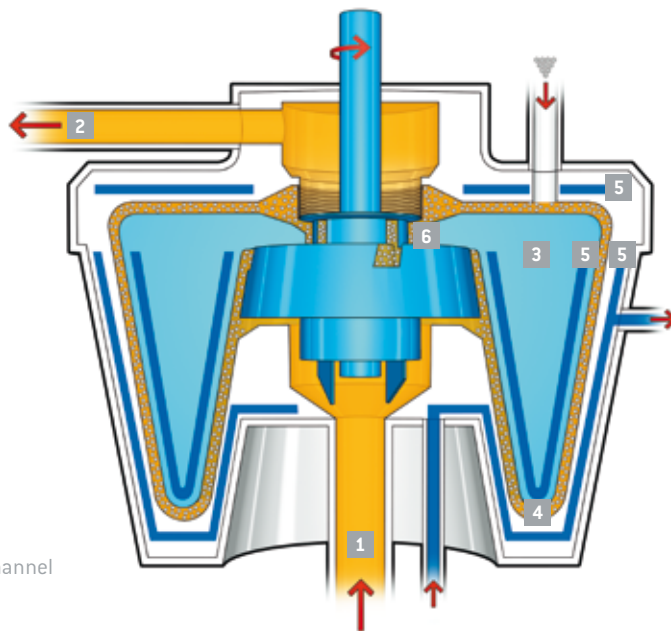
COBALL®



The quality of the finished product is influenced by the peripheral rotor speed, the milling gap, the material and diameter of grinding media, bead load and flow velocity. Each of these parameters can be varied at will to create the optimum conditions for each product.

CoBall®-Mill technology sets the standard for reproducibility, high quality results with consistently sized particles are assured.

Annular gap bead mills transfer four times more energy into the product than conventional stirrer mills which improves the particle size but generates some heat. A standard feature of the CoBall®-Mill is a high efficiency cooling circuit with a large surface area that effectively removes the unwanted heat. Therefore the finished product is protected from temperatures that may affect quality.



- 1 Product infeed
- 2 Product outlet
- 3 Rotor
- 4 Grinding gap
- 5 Heating/cooling
- 6 Bead recirculation channel

Key benefits

- High quality product with consistent particle size distribution
- Optimum adjustment for each product
- Product temperature controlled
- High throughput with very fine milling results, even for highly viscous products
- Economical use of cleaning agents
- Quick changeover between products
- Fully CIP-compatible, cleaning without removing milling beads
- SIP (for pharmaceutical applications)

Standard version

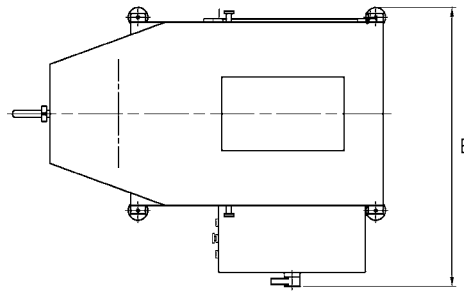
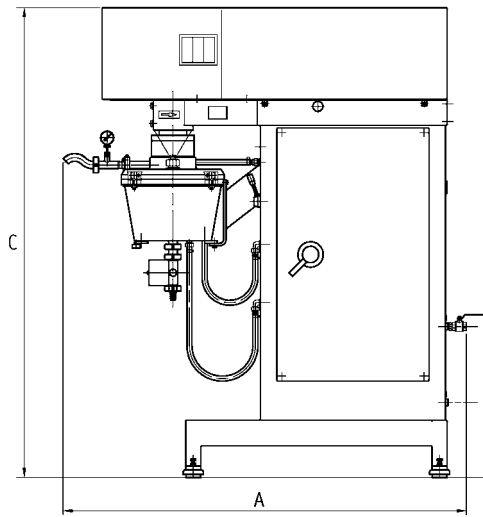
- Single acting mechanical seal
- Seals in EPDM
- Milling chamber cooling
- Zircon oxide milling beads
- IP 55 protection for mill motor and switchboard

Options

- CIP cleaning system
- Explosion-proof design (ATEX)
- Double acting mechanical seal with fluid flush
- Temperature control
- Product flow control
- Pressurization of milling space (up to 5 bar)
- Sterile version available
- Pharmaceutical finish with unit certification
- Frequency converter for speed control
- Peristaltic or gear pumps
- Milling chambers and rotors available to suit your product
- Choice of milling media
- Further options upon request

Applications

- Precision milling of chocolate coatings and crude cacao pulp
- Roasted nuts, peanuts, hazelnuts, almonds, sesame
- Pharmaceutical actives
- High-pigment pastes, lipstick masses
- High-tech and sanitary ceramics
- Paints and varnishes
- Semiconductor coatings
- Agro- and fine chemicals
- Paper pulp, thermographic paper coating, heat-sensitive coatings
- Precision filler milling, e.g. titanium oxide



	Throughput (l/h), approx.	Grinding chamber volume (l)	Installed power (kW), approx.	Dimensions (mm)			Weight (kg), approx.
				Length A	Width B	Height C	
MS 12	5–40	0.5	3–4	885	515	775	160
MS 18	10–80	1	7.5–11	1160	1035	1633	400
MS 32	40–300	3	22–37	1560	1140	1855	800
MS 50	150–1000	8	45–55	1800	1200	2070	1750

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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