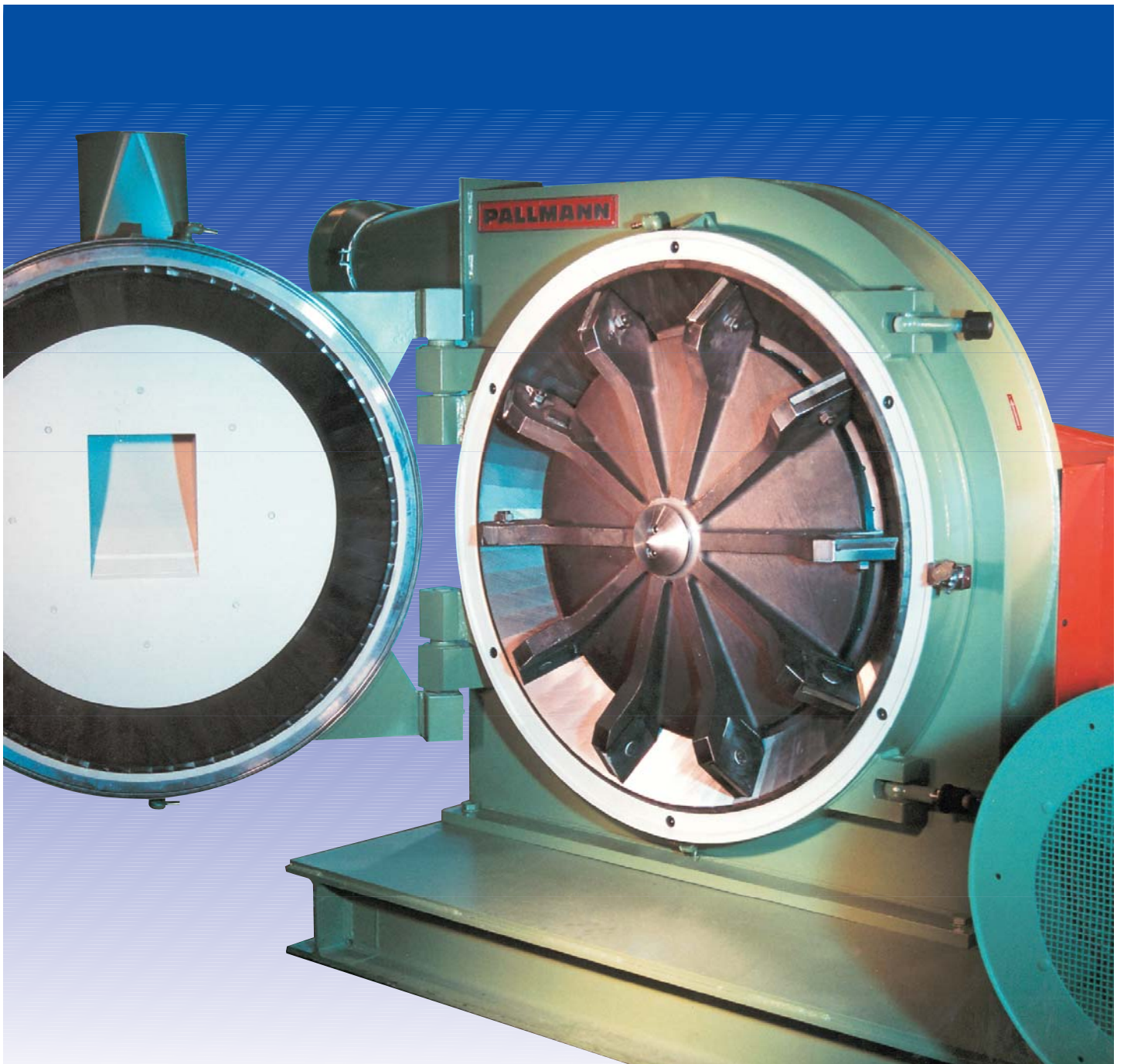


PALLMANN

Turbo Mill REF



Turbo Mill REF

Turbo Mills, type REF are impact mills for medium fine to finest grinding and fine fiberizing of soft to medium hard materials (about 4 according to Mohs) to a particle size up to 5 micron: Typical materials to be processed are:

Medium hard Minerals

Raw gypsum, anhydrite, bentonite, dry and wet clay, talc, medium-hard ores, graphite, mica, diatomaceous earth, fluorspar, chalk, barite, oil shale, shells, medium-hard limestone, kaolin, asbestos.

Coal-like Products

Brown coal, lignite, peat.

Dyes and Pigments

Organic and inorganic dyes and pigments, iron oxide, lead oxides, ochre.

Pharmaceutical Products

Drugs, leaves, ergot, china bark, manioc and other roots.

Salts and Phosphates

Potash, fertilizer salts, raw phosphates, triple superphosphate, metasilicate and other alkalis, glauber's salt, sodium phosphates.

Chemical Products

Ammonium nitrate, aluminum sulfate, magnesium oxide, washing and detergent powders, soda, ammonium sulfate, sodium bicarbonate.

Oil and Fatty Products

Spices, bone and fish meal, dry meats, soap fat, fresh animal bones, nuts, malt, olive pits, crackling, bone glut.

Grain Milling Products

Extra fine flour, farinaceous products, barley, wheat feeds, carob beans, hay, rice flour, potatoes, cocoa shells.

Fibrous Materials

Wood flour, chips, pulp, straw, bagasse, asbestos, chrome and tanned leather waste, cork granules and flour, textiles, board and paper waste, flocking chemical cellulose, bamboo, hemp, reeds, wet and dry tobacco stems.

Cocoa and Coffee

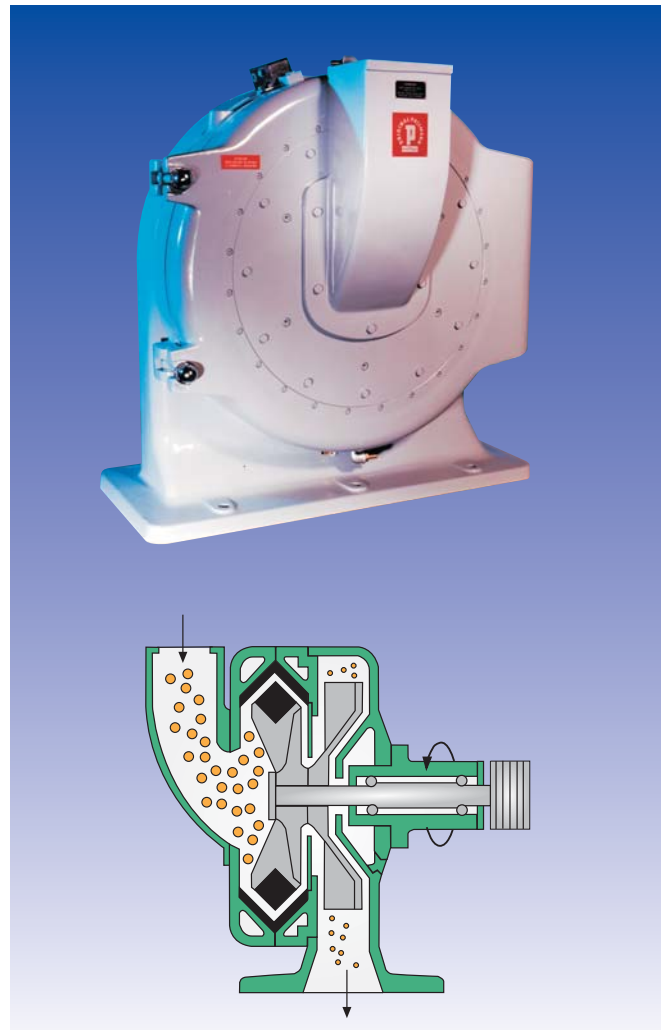
Cocoa beans, cocoa presscakes, coffee.

Plastic and Elastomeric Products

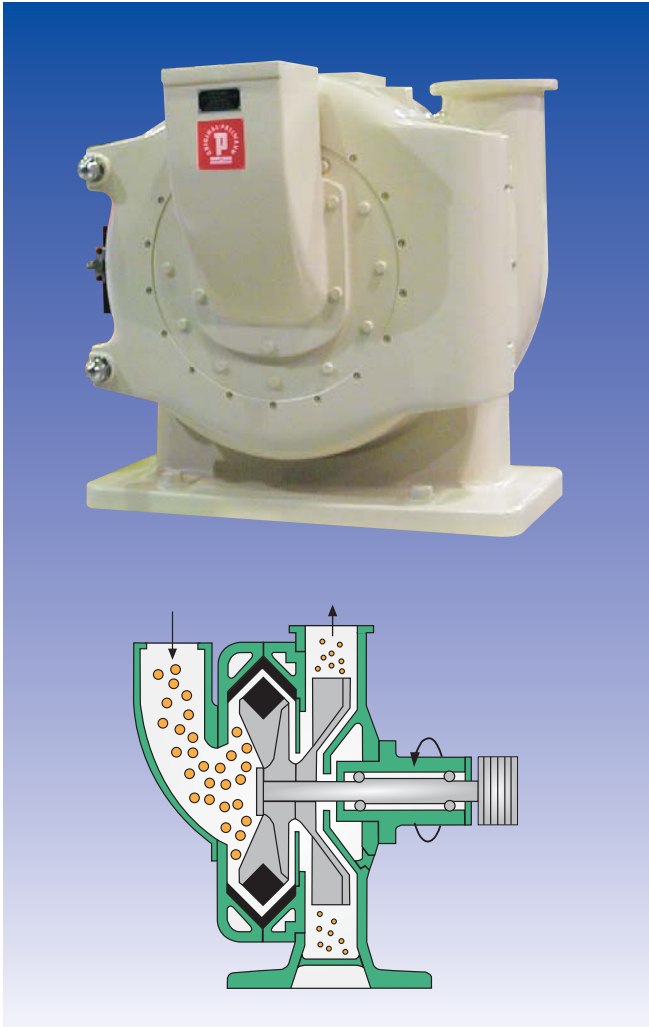
Polyethylene, rigid and flexible PVC, polystyrene, nylon, plastic foam, rubber waste, record scrap, reinforced plastic waste.

Natural Resins and Pitch

Colophonium, bitumen, asphalt, cumaron, coal tar, hard pitch.



Turbo Mills, type REF are built for tough around-the-clock operation. Heavy thick walled machine housings in cast iron or steel fabricated design and a generously dimensioned bearing and drive arrangement guarantee smooth operation and a long service life. The bearing and drive system is flanged to the machine housing and can be easily exchanged as a compact premounted unit. The bearings are specially sealed to prevent dust penetration. The rotor is carefully stress relieved and electro dynamically balanced for smooth vibration-free operation. The grinding chamber is easily accessible through a large front door. As a standard a safety door locking allows only access to the grinding chamber at stand still of the rotor.



The Turbo Mill, type REF is supplied in its standard version with finished product discharge straight down. A special housing design with integrated product discharge to the top is available. This option allows installation of the machine without any additional support frame or costly concrete foundation and pit. The Turbo Mill, type REF is powered by a motor and can either be V-belt or directly driven. The single motor Turbo Mills have proven successful by their simple, safe and wear resistant construction. They work according to a new principle and are different from regular designs. Finest qualities in continuous operation and decreased spare parts cost are outstanding features of these machines.



Unique method of size reduction

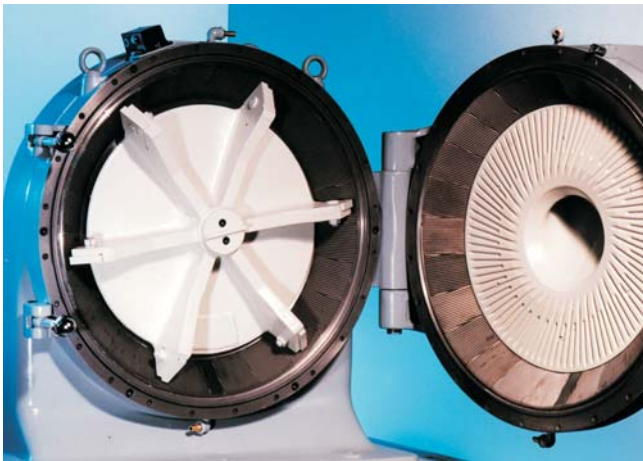
Material entering through the feed chute is thrown by an impeller rotating at high speed against the grinding liners of a chamber formed by two opposing cones. The liners are divided into replaceable segments.

There are three principles of reduction employed in a single action, depending on liner design:

1. Turbo (Jet)
2. Impact
3. Shear

The impeller and a fan located behind the impeller on the same shaft create a high velocity air stream. The air suction created in the collecting chamber located behind the grinding chamber draws the ground particles through an annular gap between the two chambers. Particle fineness is controlled by inserting confining rings of different sizes in the annular gap. The fineness of the material is determined by how long it remains in the grinding chamber before it is removed by the air suction.

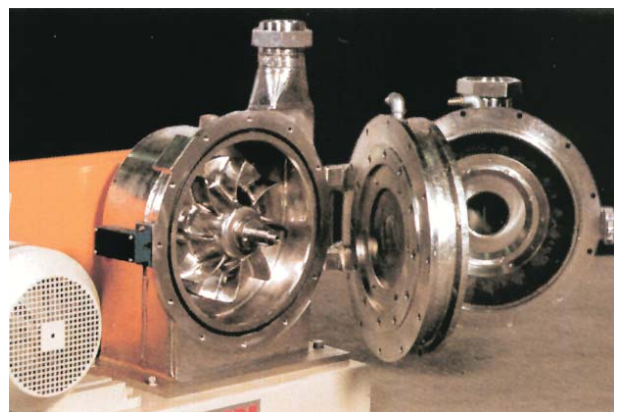
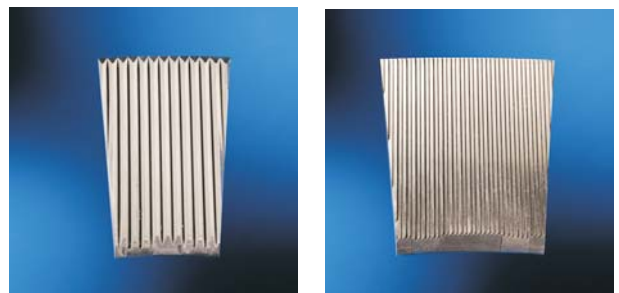
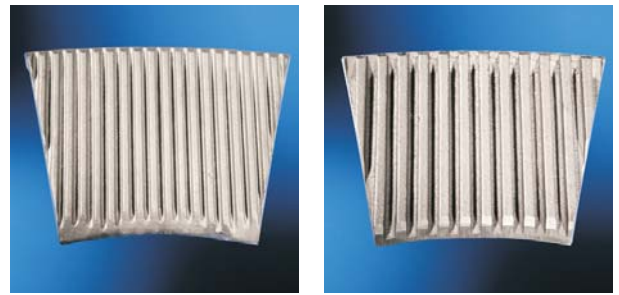
CONVINCING TECHNICAL FEATURES



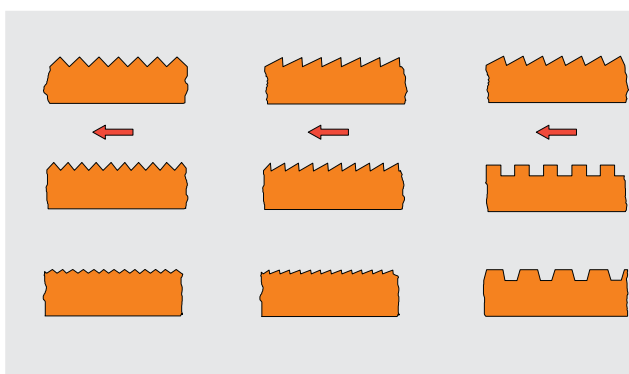
Performance in every details

The screenless Turbo Mill, type REF occupies a special position among the well-known grinding systems.

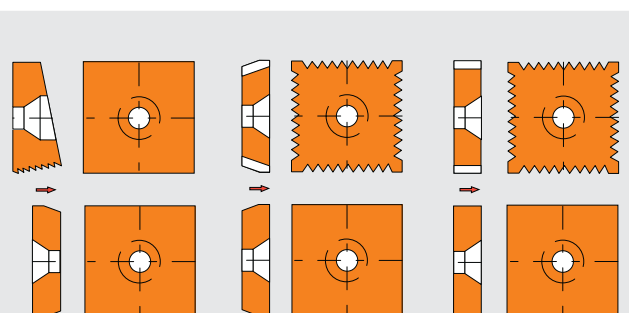
The versatility makes this machine well suited for a large area of applications, for fine grinding and fine fiberizing. This mill is especially important for the chemical industry. A very small particle size distribution is achieved in the V-shaped grinding chamber, equipped with exchangeable grinding segments of different profiles. Additional sifting is not necessary. The particle size desired can be adjusted by different grinding elements, by changing the sense of rotation and the air throughput. Even after increased wear of the grinding elements the fineness remains relatively constant. The machine can be delivered in mild or stainless steel. Explosion proof and pressure shock resistant designs are available.



Baffle plate segments



Impeller wear plates





Easy cleaning

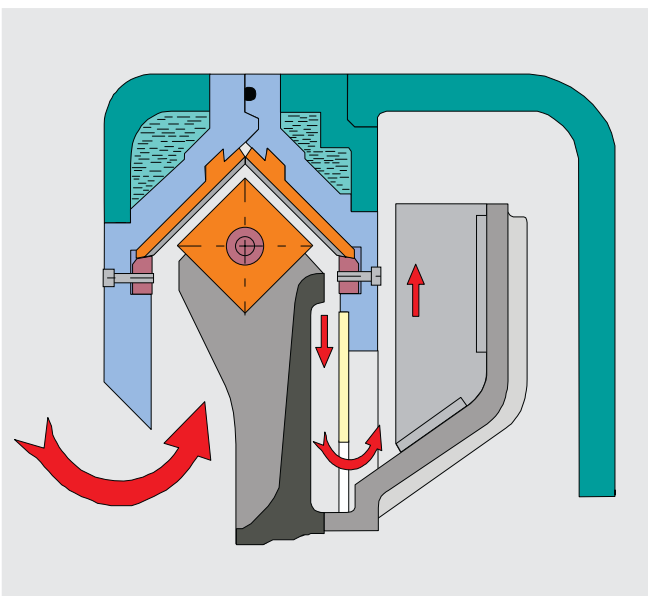
The front door of the machine is easy to open and allows free access to all inner parts of the grinding chamber. A sanitary design with double hinges for easy access to the collecting chamber is available.

Highly wear resistant design

A reason for the widespread use of the Turbo Mill, type REF is the wear resistance of the wear elements which makes it capable of economically reducing materials which up to now could be pulverized in high speed mills only with excessive abrasion. The wearing points are the beater plates fixed on the impeller and the grinding segments. A wear liner in the collecting chamber is available as an option.

Special designs

The Turbo Mill, type REF can be delivered with water-cooling jackets behind the grinding segments, air holes in the housing for additional cooling, or a system for blowing in warm air for drying of the material as it is pulverized. All parts in contact with material can be made of stainless or an acid-resistant steel. The complete grinding system can be delivered in hermetically sealed design for operation with inert gas. For this system an air-tight enclosed feeder is available.



Decisive advantages:

- Suitable for a large variety of applications
- No internal screen installed
- Cool grinding operation
- Dry and wet grinding possible
- Easy adjustment of required fineness
- Easy exchange of wear parts
- Rugged and reliable design
- Very low maintenance cost

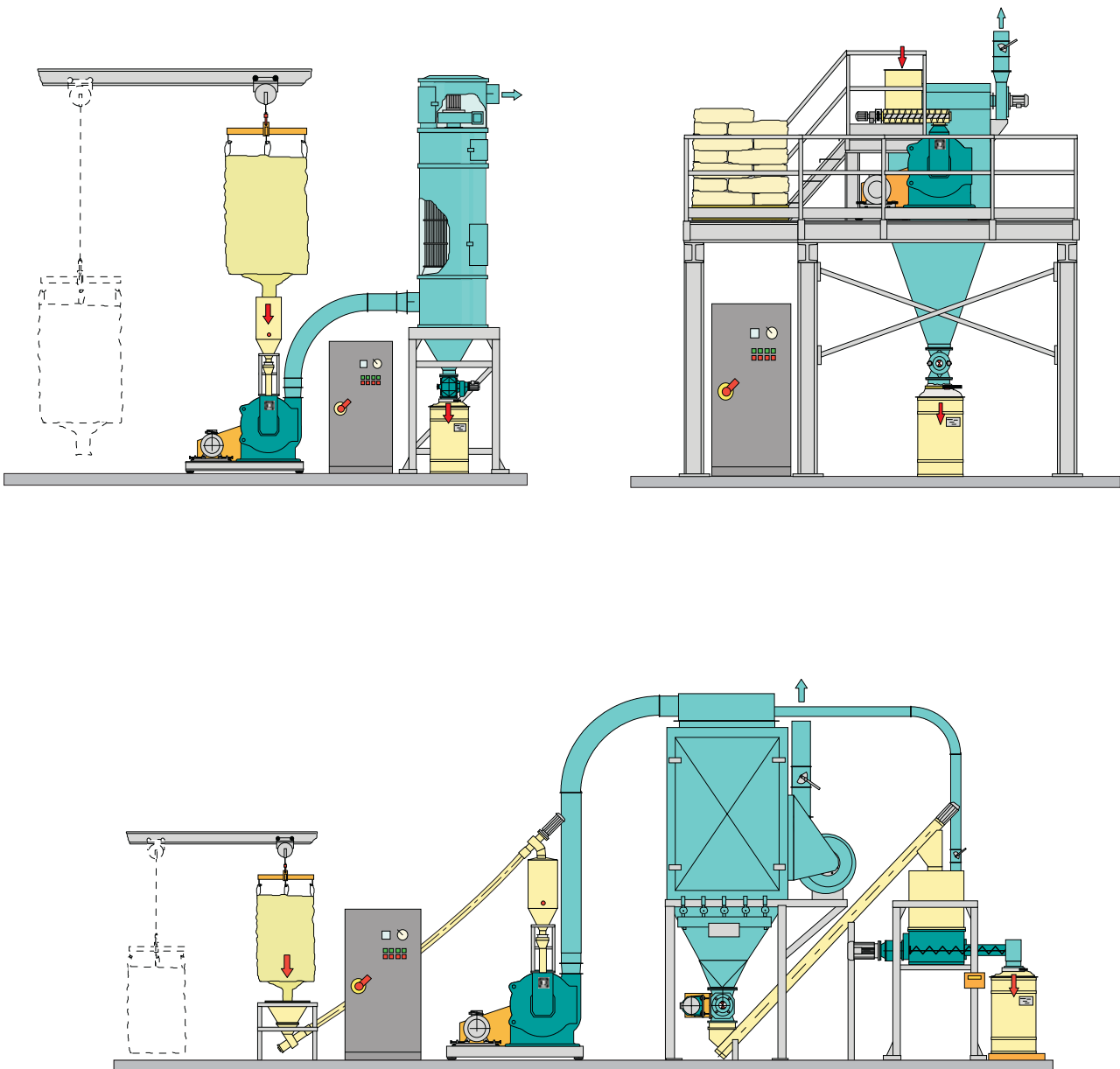
PERFORMING SYSTEMS

Proper installation guarantees optimum machine efficiency

Turbo Mills, type REF should always be fed by vibratory or screw feeders in order to make sure, that a uniform feed rate and optimum use of the installed electric power can be achieved. Between the feeder and the feed chute of the mill it is recommended to install either a plate or drum magnet or even better a metal separator.

The air flow generated by the Turbo Mill should be taken care of, by installing an aspiration system with dust collector.

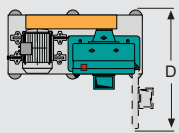
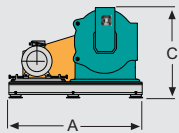
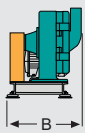
The Turbo Mill can be installed on a flat concrete floor if lateral product discharge has been chosen, or on a steel frame or on concrete foundations with a discharge pit if you decide for standard design with product discharge straight down.



Technical data:

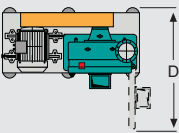
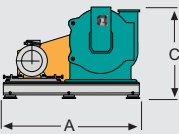
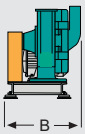
Type	REF	4N	6N	8N	12N	12D
Scale-up factor	F=ca.	0.6	1.0	1.7	2.9	5.8
Diameter of grinding chamber	mm	400	600	800	1200	2x1200
Standard Speed of impeller	rpm	5.600	3.700	2.800	1.850	1.850
Net weight machine without motor	approx. kg	320	620	1200	2800	5435
Shipping space machine only	approx. m ³	1.0	1.4	1.7	5.0	8.0
Recommended motor	kW	15	22	45	75	150
Air displacement of machine	approx m ³ /min	20	40	70	130	260

Standard version with bottom discharge

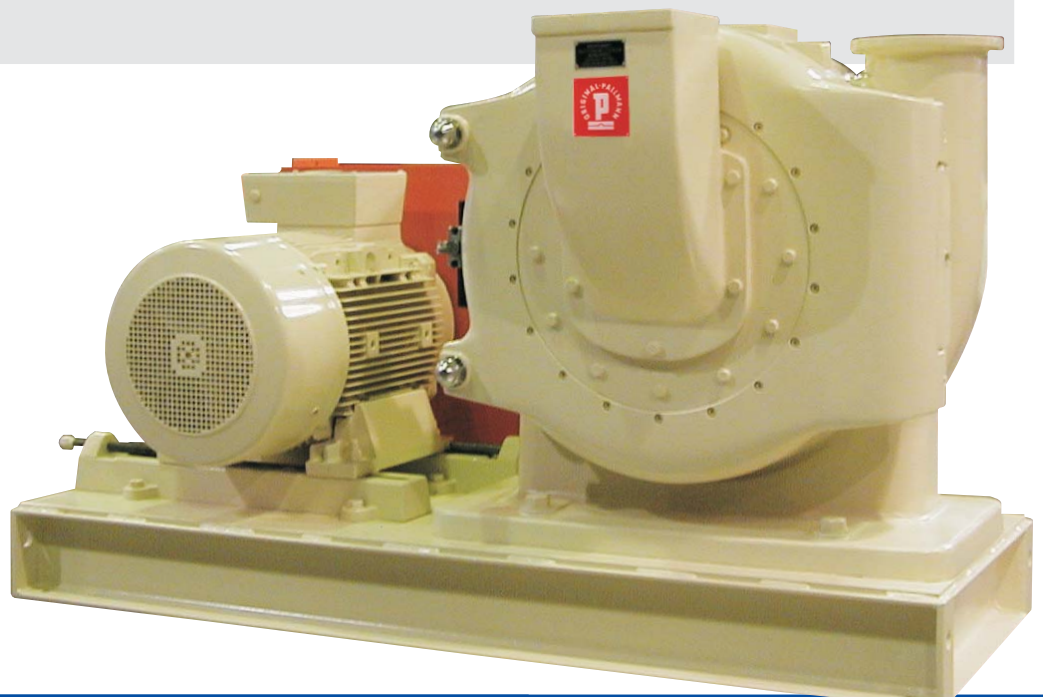


A	mm	1320	1760	2100	3000	3700
B	mm	850	950	1150	1550	1880
C	mm	645	1055	1285	1635	2300
D	mm	1130	1670	1950	2920	3200

Design with lateral product discharge to the top



A	mm	1320	1760	2100	3000	3700
B	mm	850	950	1150	1550	1880
C	mm	705	1052	1285	1635	2300
D	mm	1130	1670	1950	2920	3200





The PALLMANN Group of Companies

The PALLMANN Group of companies is a leading manufacturer for size reduction machines and systems for the process industries. PALLMANN Maschinenfabrik develops and manufactures machines and complete systems according to customer requirements or as standard solutions for the preparation of almost any material as well as recycling products. In its headquarters in Zweibrücken, PALLMANN operates one of the world's largest research and technology centers as well as a training- and service center. More than 130 different test machines are available for the preparation of a wide variety of materials. A downstream laboratory analysis of the test material as well as the preparation on a production scale is possible. In addition to the manufacturing facilities in Europe, North- and South America, the PALLMANN group of companies operates a world-wide spare parts- and service network.



The PALLMANN Program

Engineering and Service:

Design and manufacturing
Research and development
Production scale testing
Laboratory analysis
Worldwide service
Spare parts
Controlling
Process Control
Installation & Start-up
Overhaul & Repair

System solutions for:

Pulverizing
Granulating
Agglomerating
Recycling

Products:

Agglomerators
Pulverizing Systems
Disc Mills
Turbo Mills
Pin Mills
Laboratory Mills
Universal Mills
Complete Grinding Systems
Knife Mills
Profile Shredders
Rubber Granulators
Pipe Crushers
Air-Swept Mills
Impact Mills
Industrial Granulators
Cryogenic Grinding Systems

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