

Centrifugal Mill
Bead mill for wet
grinding and ultrafine
dispersing.

ZR-Line

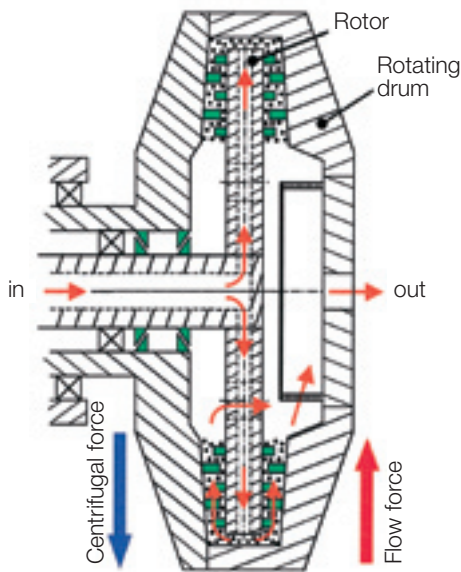


Buhler – your partner for dispersing technology.

High performance centrifugal bead mill for dispersing and ultra-fine grinding in recirculation or pendulum operation with target particle sizes in the nanometre scale.

Process zone with rotor and rotating stator drum with differential peripheral speed up to 21 m/s. On the basis of product viscosity and bead size, highly efficient bead separating can be adjusted through variable overdrives between rotor and drum.

The active principle of centrifugal bead separation allows energy densities up to 5 kW/l. Flexible adjustable hydraulic bead pressure enables the processing of products in a wide range of viscosities and the operation with grinding bead sizes from 0.1 to 0.8 mm.



Rotor and drum rotate with different velocities

The unique energy density combined with the centrifugal bead separation and the excellent cooling properties result in target particle sizes in the nanometre range highly efficient with minimum specific energy consumption.

The tangential arranged peg-counter peg principle guarantees minimum stress of the basic material which results in low wear and high durability of the grinding chamber.

Product cooling

The combination of efficient plate heat exchanger with the very high throughput rates allows the processing of temperature sensitive products under quality rectifying energy density and low grinding temperatures.

Main drive power from 45 – 63 kW with frequency inverter and torque control system.

Colourants and Coatings

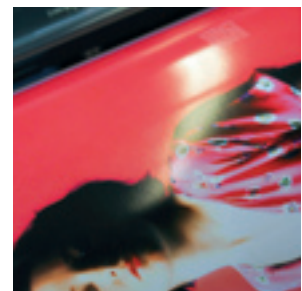
Recirculation rate up to 5000 l/h

- Liquid printing inks
- Automotive OEM and repair coatings
- Pigment concentrates
- Industrial coatings



Inkjet Inks

Leading players count on the unique properties like energy input and throughput rate.



The centrifugal principle offers appreciable benefits.

Centrifugal principle

- Very small grinding media
 - Ultrafine grinding in the submicron range
- Recirculation operating mode with very high throughput
 - Narrow particle size distribution
- Very high grinding capacity
- Controlled, selectable grinding media
- Pressure in automatic operation
 - Increased productivity
- Versatile: for products with low to medium viscosity (max. 500 mPas)
- Flexible: for various grinding media sizes

Quality advantages

- Improved grinding of the pigments
- Increased colour intensity
- Greater transparency
- High gloss
- Narrow particle size distribution
- Fast ink changes

Innovative technology

- Agitator with high specific throughput capacity
- Small grinding media volume
- Centrifugal separation and self-cleaning safety screen
- Parts in contact with the product made of stainless steel
- Hardened process zone
- Fast cleaning and quick bead changes
- Continuous variation of agitator speed

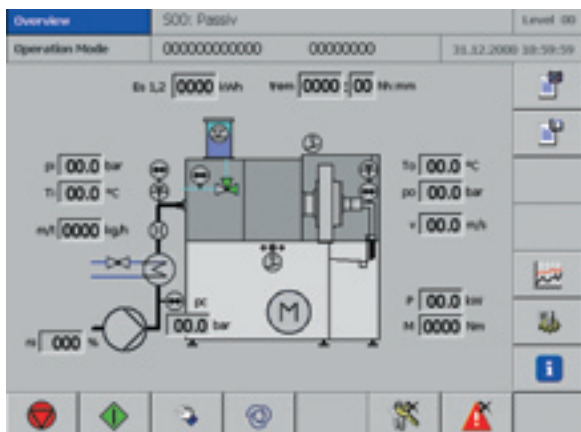
- Continuous variation of product flow rate
- Precise bearing
- Low-maintenance mechanical seal
- Reliable, rugged and low-maintenance machine

Control system

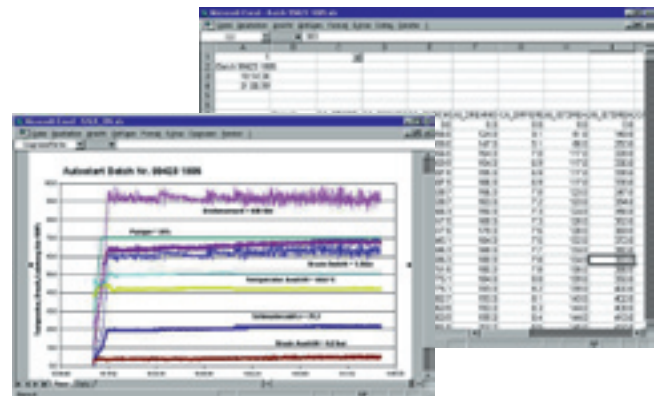
The control system of the centrifugal bead mill meets the highest demands regarding user friendliness, automation and control options as well as visualisation and operating data storage.

The outstanding properties are

- Torque control through frequency inverter
- Feeding rate of product pump through frequency inverter
- Display of process data
- Monitoring of all security functions
- Coloured touch-screen user interface
- Interface for serial data transmission



Graphic display of automatic control system



Product conveying

Flow rate range can be selected from 0.8 to 5.0 m³/h with frequency converter

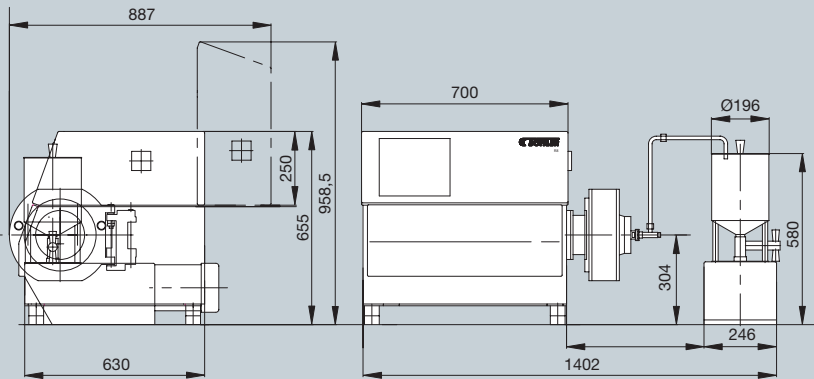
- Gear pump for products with medium viscosity
- Hose pump for products sensitive to shear
- Eccentric screw pump for low-viscosity and medium-viscosity products
- Optional flowmeter available

Product cooling

- Selection of different heat exchangers

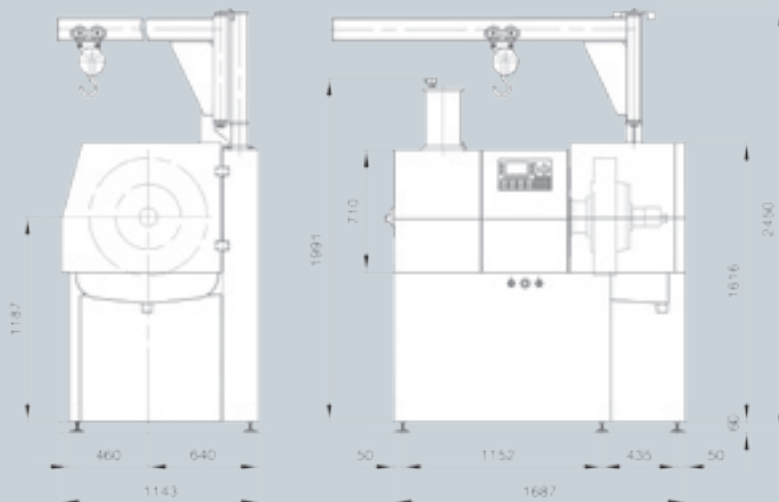
Technical data.

For ultrafine dispersion and real size reduction of low- to medium-viscosity, water- and solvent-based products



Technical data

Type	Drive power kW	Product flow rate m ³ /h	Active grinding chamber volume dm ³	Grinding media ø in mm	Weights in kg			Volume seaworthy packing m ³
					packed kg	rail-worthy kg	sea-worthy kg	
R8	4	0.02 – 0.2	0.8	0.1 – 0.8	200	220	250	1.5



Technical data

Type	Drive power kW	Product flow rate m ³ /h	Active grinding chamber volume dm ³	Grinding media ø in mm	Weights in kg			Volume seaworthy packing m ³
					packed kg	rail-worthy kg	sea-worthy kg	
ZR120	45	0.5 – 5.0	6.6	0.1 – 0.8	2500	2650	3000	8.0
ZR180	63	0.5 – 5.0	12.0	0.1 – 0.8	2500	2650	3000	8.0

Equipment for ZR-Series

S = Standard Basic machine	
Centrifugal agitator with high specific throughput	S
Process zone of hardened steel	S
All parts in contact with the product made of stainless steel	S
Self-cleaning safety screen	S
Precision bearing	S
Low-maintenance mechanical seal	S
Easy-to-operate control system with membrane keypad and graphic display	S
Monitoring of the product pressure	S
Monitoring of the product temperature	S
Automatic control of inlet temperature	S
Rotor speed variation by integrated frequency converter	S
Gear pump for product conveying	S
Conveying speed variation by integrated frequency converter	S
Serial interface for data transmission	S

O = Option

Machine of explosion-proof design	O
Flowmeter	O
Cooled recirculation tank	O
Product cooler	O
Handling unit	O
Collection of relevant process data in Microsoft Excel®	O
Integration in process control system	O
Profibus data bus for process control system	O

Services.



Training of customer personnel by Buhler specialists.

Technology centres all over the world

- Extensively equipped in Switzerland, Germany, USA and Japan
- Qualified and experienced technologists
- Focused development of formulation, process and equipment
- Simulation and process optimisation

Operational training

- On site personnel trainings
- Focused courses in our technology laboratories
- Wide range of topics, managed by our technologists

Installation and start-up

- Short installation and start-up time
- Competent installation
- Professional start-up

Plant engineering

- Tailored concept studies
- Process engineering from small production unit up to turnkey plants
- From one source: equipment, technology and automation
- Professional quality, cost and time scheduling

Customer service

- Consulting by our engineers and service specialists
- Ensuring lifetime operational efficiency of equipment
- Support by a worldwide and efficient spare parts service

Roll overhaul

- Professional overhaul of your rolls
- Ensure constant, high quality
- High economic efficiency

Bühler AG
CH-9240 Uzwil, Switzerland
T +41 71 955 34 91
F +41 71 955 31 49
grinding.dispersion@buhlergroup.com
www.buhlergroup.com

