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Russian avant-garde equipment for milling

since 1992

EQUIPMENT CATALOGUE

St. Petersburg, Russia

CRUSHING AND MILLING EQUIPMENT

VIBROTECHNIK
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CRUSHERS

JAW CRUSHERS

The jaw crushers are designed to crush brittle bulk materials of various strength and hardness. In the jaw crushers, the material particles are broken down by the compressive and shear strains between the fixed and moving jaws. The grain size of the crushed material is determined by the gap between the jaws in the lower part (the discharge slot) and the physical properties of the material.

ADVANTAGES

- The complex movement of the jaw (primarily horizontal vibrations in the upper part of the crushing zone and vertical vibrations in the lower part) provides a high degree of crushing;
- The walls of the housing in the crushing zone are protected by durable steel liners;
- The interchangeability of the fixed and moving jaws increases their service life;
- The configuration of the loading hopper and cover and the connection to a dust removal system prevent crushed material from being ejected and reduce dust;
- There is a hinged (removable) loading hopper for easy cleaning of the crushing chamber and monitoring of the gap between the jaws;
- The attachment of the jaw wedges to the ends of the base and the crank arm prevents damage to the attachment, allowing the jaws to be easily replaced;
- Easy adjustment of the V-belt drive by a rotating slide plate;
- Housings, limit microswitches and an emergency stop button ensure limited access to the drive parts of the crusher and safe operation;
- The use of a large-diameter support thread in the adjustment device reduces the likelihood of it jamming;
- Patented designs. Patent for utility model No. 159277 of September 24, 2015.

INDUSTRIES

- Mining
- Metallurgical
- Construction
- Chemical
- Pharmaceutical

APPLICATIONS

Ferroalloys, ore, slag, granite, marble, limestone, coal, coke, glass, ceramics, opal.

JAW CRUSHERS

Jaw crusher **JC 6M**

Jaw crusher **JC 10M**

Jaw crusher **JC 15**

CHARACTERISTICS	JC 6M	JC 10M	JC 15
Loading door dimensions (mm)	60x100	100x200	150x250
Maximum initial material grain size (mm)	50	70	110
Hardness of material crushed	Up to 8 Mohs units*	Up to 7 Mohs units	
Discharge slot adjustment range (mm)	2-25	3-25	1-25
Average product particle size at minimum aperture (mm)	90%<2,0	90%<2,5	90%<1,0
Maximum output (kg/hour)	200	500	1000
Electric motor power (kW)	1,1	2,2	5,5
50 Hz supply voltage (V)	380		
Overall dimensions (Length x Width x Height/with stand) (mm)	645x340x610/ 1100	710x490x620/ 1090	1000x570x960
Weight/with stand (kg)	140/170	285/ 325	515
Jaw material – iron/ steel/ tungsten carbide	GJN-HV600(XCr14)/UNS J91109		

* - When using jaws made of tungsten carbide.

JAW CRUSHERS JC 6M AND JC 10M

Jaw crusher **JC 6M** is designed for crushing small samples of material in laboratories with low and medium workloads. The small size, low weight and electric motor power make it possible to use the **JC 6M** in mobile laboratories, in low-capacity process installations and in geological surveying.

Jaw crusher **JC 10M** is a more powerful model of the laboratory-class equipment, used for continuous crushing of material in small and medium-sized facilities. When it is equipped with a support stand with a collecting container, it can be used for intermittent crushing of samples.

JC 6M on stand with collecting container

JC 10M on stand with collecting container

ADVANTAGES OF JC 6M AND JC 10M:

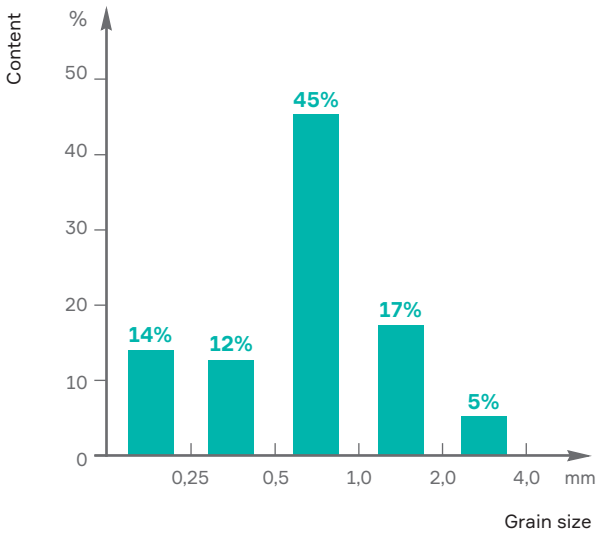
- Window for cleaning inner surfaces of crusher;
- Use of a shear pin in the adjustment device protects the crusher against breakage when an uncrushable body falls into it;
- Attachment of the base with a quick-release lug for easy maintenance;
- Increased service life of the **JC 10M** jaws by rotating them 180°.

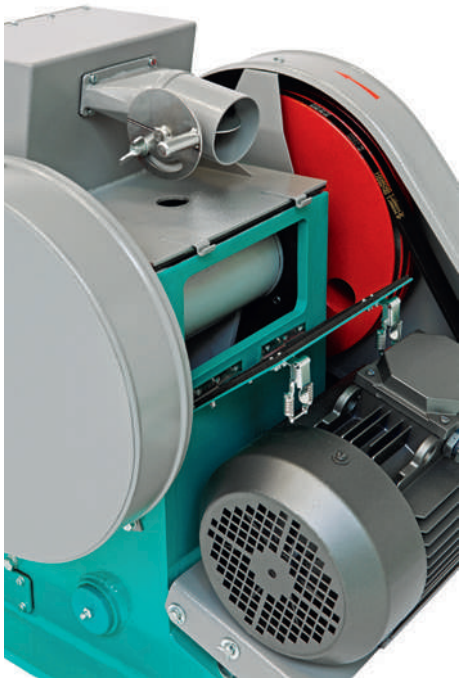
Device for adjusting gap between jaws of **JC 6M**

Quick-release attachment lug for the axle of the **JC 6M** and **JC 10M**

Crushing on JC 10M

Material: Ferroalloy FS70 10–40 mm;
Output: 30 kg/hour





Pipe for connecting **dust collector** and cleaning window

JAW CRUSHER JC 15

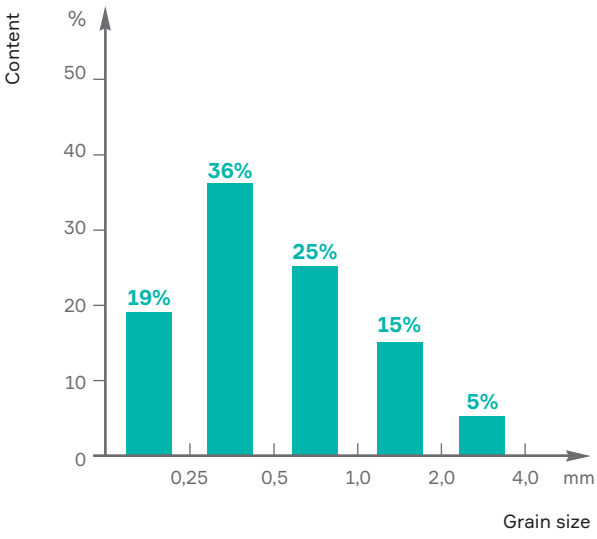
Jaw crusher **JC 15** is a high-power model designed for busy laboratories or small production facilities. The increased wall thickness, 5.5 kW electric motor and durable bearings make it possible to operate the **JC 15** continuously with minimal process interruptions.

ADVANTAGES OF JC 15:

- Increased jaw service life by rotating them 180°;
- Collecting container on cart;
- Bolted attachment of front wall of housing;
- Quick-release liners of crusher housing;
- Dish spring washers in adjustment device:
  - make it possible to adjust product grain size by changing (limiting) the crushing force;
  - protect the crusher against breakage when an uncrushable body falls into it.

Crushing on JC 15

Material: Pink quartzite 90–100 mm;
Output: 55 kg/hour



Pink quartzite before and after crushing

Jaw crusher **JC 15**

Device for adjusting gap between jaws of **JC 15**

Crank arm, armor, jaws and jaw fastening wedge of **JC 15**

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DOUBLE-ROLLER CRUSHER

DRC 200X125

The double roller crusher with smooth rollers DRC 200x125 is designed to crush brittle materials of various strengths.

The operational principle of the double roller crusher is based on simultaneous compressive and shear strains between rollers rotating in opposite directions. The grain size of the crushed material is determined by the gap between the rollers, the compressive force of the springs and the physical properties of the material.

DRC 200x125 with control panel and vibratory feeder **VF 1** on support

INDUSTRIES

- Mining
- Metallurgical
- Construction
- Chemical

CHARACTERISTICS

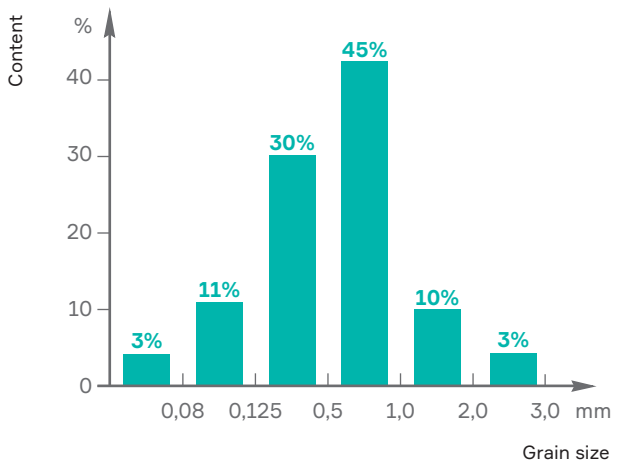
Charging door dimensions (mm)	100x25
Maximum material feed size (mm)	16
Hardness of material crushed	Up to 7 Mohs units
Distance between rollers (mm)	0-12
Average crushed product particle size at minimum aperture (mm)	90%<0,25
Maximum output (kg/hour)	700
Electric motor power (kW)	2x1,1
50 Hz supply voltage (V)	380
Receiving container volume (L)	6,6
Overall dimensions (mm) (Length x Width x Height)	680x400x950
Weight without / with Control panel (kg)	245/250
Roller material: tool steel	AISI 1066, AISI 01, DIN 150Cr14

ADVANTAGES

- Effective capture of the material particles is ensured by the differing speed of the rollers;
- The adjusting mechanism makes it possible to ensure a uniform gap between the rollers;
- The spring unit protects the crusher against breakage when an unbreakable object falls into it, while adjustment of the compressive force of the springs reduces overmilling of the material crushed;
- The side walls of the crushing chamber are protected by adjustable fluoroplastic liners that limit spillage of the material from the ends of the rollers;
- The quickly removable loading funnel and crushing chamber housing simplify maintenance and cleaning;
- The material feed rate is adjusted using
  - o a sliding gate on the loading hopper;
  - o Vibratory feeders VF 1 or VF 2.

Crushing on DRC 200X125

Materials: Granite <5,0 мм
Output: 60 kg/hour



APPLICATIONS

Granite, marble, diatomaceous earth, granodiorite, limestone, aluminum oxide, flux, glass, PVC, sugar.

Rollers and fluoroplastic liners

Force adjusting spring unit

Moveable roller adjustment unit

HAMMER CRUSHER
HC 2X2, HC 5X2 AND HC 5X5

Hammer crushers are designed to crush brittle materials and break down conglomerates.
The Hammer crusher **HC 2x2** is laboratory-class equipment designed to crush small batches of material with output up to 100 kg/hour.
Hammer crushers **HC 5x2** and **HC 5x5** are industrial-class equipment used in busy laboratories or in small and medium-sized production facilities.
The operational principle of a hammer crusher is based on impact on material particles.

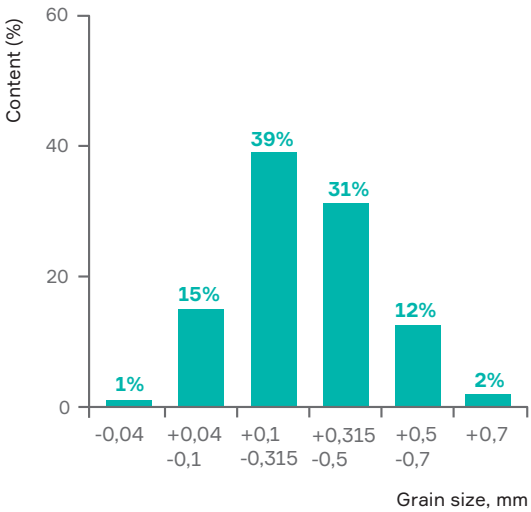
Material particles are broken down:
- when a hammer falls on them;
- when they impact the liner and walls of the housing;
- when the particles collide with each other.

ADVANTAGES

- The ability to obtain various crushed product grain sizes by:
  - installing grates with openings of various shapes and sizes from 0.8 mm;
  - selecting the number and shape of the hammers;
  - changing the **HC 2x2** rotor rpm;
  - installing a smooth or ribbed liner in the cover of the **HC 2x2**;
- Free suspension of the hammers on the rotor axes reduces the probability of mill breakage when an unbreakable object falls into the working chamber;
- The size and configuration of the loading funnel have been selected for safe maintenance and to prevent ejection of material particles during operation;
- The hinged bolts on the cover of the **HC 2x2** provide quick access to the crushing chamber for inspection and replacement of hammers and grates, and cleaning of the chamber;
- Ability to connect to the dust collector to:
  - lower the temperature in the crushing chamber;
  - lower the content of the dust fraction in the product;
  - separate material into three fractions: sedimented into the crusher receiving container, cyclone and bag filter.
- Equipment of the **HC 5x2** and **HC 5x5** with a support frame and receiving containers of various volumes depending on the process task.

Hammer crusher **HC 2x2**

Crushing on HC 2x2
Material: Glass 5.0–8.0 mm;
Output: 70 kg/hour.

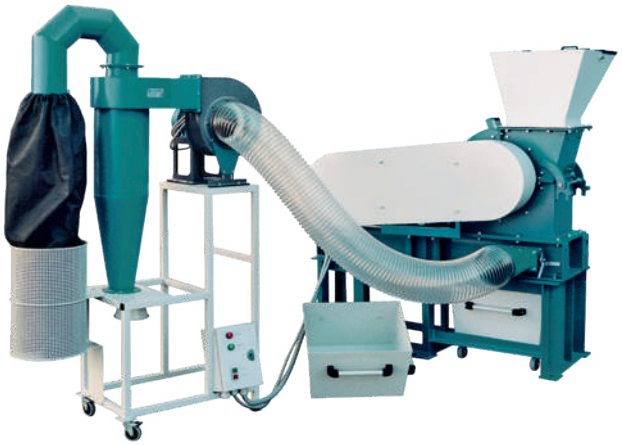


INDUSTRIES

- Mining
- Metallurgical
- Construction
- Chemical
- Pharmaceutical

APPLICATIONS

Coal, foil, polyester resin, glass, slag, salt, shale, electrical circuits, food products.



Hammer crusher **HC 5x2** with dust collector, support frame, local control panel and two 50-liter receiving containersiners

Hammer crusher **HC 5x5**

Characteristics	HC 2x2	HC 5x2	HC 5x5
Loading door dimensions (mm)	158 x 110	254 x 300	300 x 498
Maximum initial material size (mm)	20	100	
Hardness of material crushed	Up to 4 Mohs units	Up to 5 Mohs units	
Size of discharge grate openings (mm)	0.8–20	2–50	
Average crushed product particle size at minimum aperture (mm)	90%<0,5	90%<2,0	
Maximum output (kg/hour)	100	750	1500
Rotor rpm	1,000–3,000	1,500	
Electric motor power (kW)	1.5–3.0	11	22
50 Hz supply voltage (V)		380	
Overall dimensions (Length x Width x Height) (mm)	885 x 550 x 1410	1560 x 805 x 1230	1755 x 840 x 1185
Weight (kg)	120	580	750
Hammer material – tool steel		AISI 1066	

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VIBRATING CONE MILLS

VCM 6 and VCM 10

Vibrating cone mills are designed to crush and pulverize hard and brittle bulk materials of various strengths.

In the cone mill, pulverization occurs by means of abrasion – simultaneous compressive and shear strain of material particles between the outer and inner shells.

Vibrating cone mill **VCM 10**

INDUSTRIES

- Mining
- Metallurgical
- Construction
- Chemical

Vibrating cone mill **VCM 6**

CHARACTERISTICS	VCM 6	VCM 10
Loading door dimensions (mm)	Ø95	Ø125
Maximum initial particle size (mm)	5	10
Initial material hardness	up to 7 Mohs units	up to 7 Mohs units
Average product particle size at minimum slot, mm	90%<0,25	90%<0,25
Maximum output (kg/hour)	10	30
Initial material hardness	up to 7 Mohs units	up to 7 Mohs units
Electric motor power (kW)	1,5/0,55	1,5
50 Hz supply voltage (V)	220/380	380
Overall dimensions (Length x Width x Height) complete with 220 V electric motor (mm)	485x235x370	-
Overall dimensions (Length x Width x Height) complete with 380 V electric motor (mm)	350x235x395	480x250x420
Weight without / with control panel, kg complete with 220 V electric motor	35 /40	-
Weight without / with control panel, kg complete with 380 V electric moto	40 /45	65 /70
Shell material – tool steel	AISI 01	

ADVANTAGES

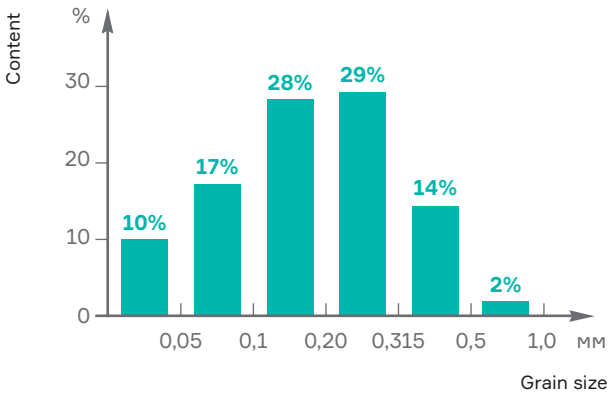
- Pulverization of material particles without overmilling of the entire sample;
- Obtaining various product particle sizes by:
  - adjusting the gap between the shells;
  - selecting the amplitude of the inner shell oscillations (**VCM 10**);
  - installing a long or short pin (**VCM 10**);
  - selecting the rpm of the drive drum weight (in the **VCM 6** – 2, and the speed in the **VCM 10** – 3);
- The possibility for operation “under debris” – without adding material to be crushed;
- Discharging of material into an inner or outer container (for collecting small-volume samples or continuous operation; **VCM 6**).

APPLICATIONS

Ferroalloys, ore, coal, slag, ceramics, glass, limestone, soda, smalt, diatomaceous earth.

Drive drum weight **VCM 6**

Pulverization on VCM 10
Material: Ferrovanadium FeV 1.0–5.0 mm;
Output: 1.7 kg/hour



Crushing cones
VCM 6 и **VCM 10**

Shells
VCM 6 и **VCM 10**

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GRINDERS

VIBRATING GRINDERS

Vibrating grinders are designed to comminute samples to a finely dispersed state in intermittent operation.

In a vibrating grinder, comminution occurs by means of abrasion – simultaneous compressive and shear strain of material particles between the crushing bodies and the cup walls. The grain size of the ground material depends on the grinder operating time, the initial grain size and the physical properties of the material, as well as the cup loading volume.

The **VG 1** vibrating grinder is designed for comminution in intermittent operation of one sample with volume from 20 to 50 cm^3, while the **VG 3** vibrating grinder is designed to handle three such samples simultaneously. The **VG 6** vibrating grinder is designed for simultaneous comminution of six small (up to 5 cm^3) samples.

ADVANTAGES:

- High comminution efficiency due to:
  - grinding elements made from high-hardness tool steel;
  - the shapes of the grinding bodies, enabling circulation of the material inside the cup.
- Quick-release cup fastener;
- Use in the drive of an elastic petal coupling that reduces the vibrations transmitted to the support surface;
- Effective noise insulation;
- Digital control timer for **VG 3**;
- There is a shelf in the **VG 3** grinder for storage of spare parts, tools, accessories and samples;
- Equipment of the **VG 1** and **VG 6** with a **PCP3** control panel featuring a timer and **T 80** pedestal.

INDUSTRIES

- Mining
- Metallurgical
- Construction
- Chemical
- Pharmaceutical
- Food

APPLICATIONS

Ferroalloys, slag, coke, granite, marble, cement, glass, soda, mineral fertilizers, soil.

Cup, roller, ring and cover of grinder **VG 1/VG 3/ VG 3M**

Material: AISI 01, DIN 150Cr14

Cup, roller, ring and cover of grinder **VG 1/VG 3/ VG 3M**

Material: ZrO2

Cup of VGE

Material: AISI 01, DIN 150Cr14

Cup of VG 6

Material: AISI 01, DIN 150Cr14

Cup of VG 6

Material: ZrO2

Cup of VG 6

Material: WC

CHARACTERISTICS	VG 1	VG 3	VG 3M	VG 6	VGE
Cup charging volume (cm^3)	20-50			2-5	250-750
Number of cups	1	3		6	1
Maximum material feed size (mm)	5			2	20
Average crushed product particle size (mm)	90%<0,05		90%<0,02	90%<0,05	90%<0,04
Comminution time (minutes)	1-30				
Maximum material hardness	8 Mohs units*				7 Mohs units
Electric motor power (kW)	0,37	1,1	2,2	0,37	2,2
50 Hz supply voltage (V)	380				
Overall dimensions (mm) (Length x Width x Height)	509x395x310	535x610x1040	670x615x1225	509x395x310	670x615x1225
Weight (kg)	54	144	300	54	350
Grinding element material	AISI 01, DIN 150Cr14, 9XC/ZrO2			AISI 01, DIN 150Cr14, 9XC/ ZrO_2/ WC	AISI 01, DIN 150Cr14

* When using grinding sets made of zirconium dioxide ZrO2 or tungsten carbide WC.

VIBRATING GRINDERS VG 1 AND VG 6

Vibrating grinder **VG 1** is designed for grinding of one sample with a volume from 20 to 50 cm^3 to a finely dispersed state.

Vibrating grinder **VG 6** is designed for simultaneous grinding of six samples of small (up to 5 cm^3) volume.

The small size, weight and power of the electric motor allow to use **VG 1** and **VG 6** as part of mobile laboratories.

ADVANTAGES:

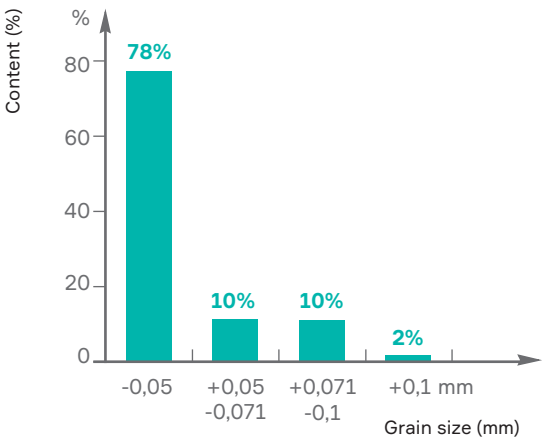
- The use of the elastic lobe clutch, reducing the level of vibration transmitted to the bearing surface;
- Compatible with Control Panel PCP3 with timer and T 80 stand.

VG 6 ADVANTAGES:

- OSimultaneous grinding of 6 samples;
- The possibility of simultaneous work with bowls of different materials:
  - tool steel;
  - zirconium dioxide ZrO_2;
  - tungsten carbide WC;
- When grinding in ZrO_2 bowls, contamination of the sample with metal is avoided;
- The use of bowls of WC allows to increase the efficiency of grinding and increase the resource of working bodies.

Vibrating grinder VG 6

Comminution on VG 6
Material: Sand 0,2 - 1,0 mm;
Material cup: WC
Comminution time: 10 minutes.



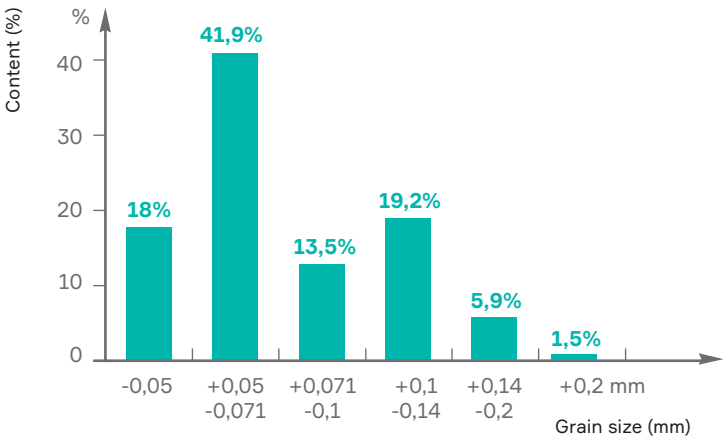
VG 1 ADVANTAGES:

- The possibility of using bowls of different materials:
  - tool steel;
  - zirconium dioxide ZrO_2;
- When grinding in ZrO_2 bowls, contamination of the sample with metal is avoided;
- Installing bowls of various materials does not require any equipment modifications;
- Roller and ring configuration provide the grinding of the material and its circulation as well.

Vibrating grinder VG 1

PCP3 control panel for **VG 1** and **VG 6**

Comminution on VG 1
Material: Coal slag < 5.0 mm;
Material cup: AISI 01, DIN 150Cr14
Comminution time: 15 minutes.



Cup, roller, ring and cover of grinder **VG 1** and **VG 3**

VIBRATING GRINDER VG 3M

Vibrating grinder VG 3M is designed for simultaneous grinding of three samples with a volume from 20 to 50 cm³.

VG 3M ADVANTAGES:

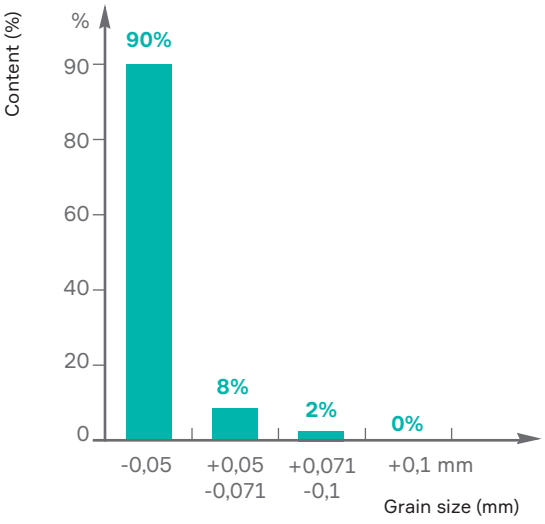
- Digital control timer;
- The use of the drive shaft provides platform oscillations with an amplitude of 10 mm and high reliability of the system.

Platform of VG 3M

Vibrating grinder VG 3M

Comminution on VG 3M

Material: Sand 1,0 - 3,0 mm
Comminution time: 9 minutes.v



Cup of grinder ZrO2
VG 1/ VG 3M

VIBRATING GRINDER VGE

Vibrating grinder VGE is designed for grinding samples from 250 to 750 ml with high productivity. The main purpose of VGE is the grinding of samples to an analytical size of less than 74 micrometers in the mining and metallurgical laboratories.

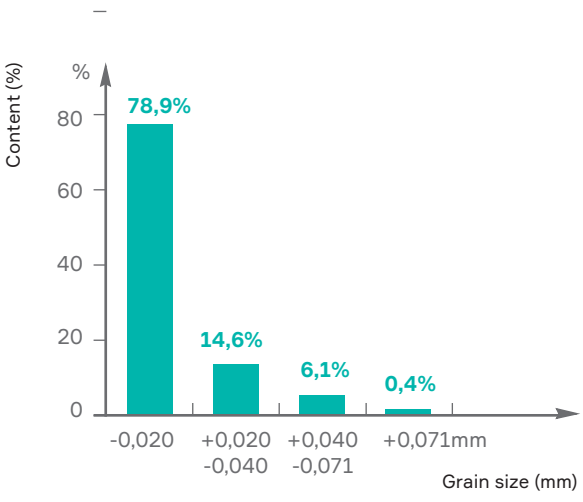
ADVANTAGES:

- Digital control timer;
- The oscillation amplitude of the platform (15 mm) provides high grinding performance;
- Safe fixation of the bowl;
- Increased roller resource due to the possibility of its 180° turn;
- The bowl lifting device and the hook for the roller provide the operating convenience.

Platform of VGE

Comminution on VGE

Material: Tungsten and molybdenum ore <90%<3;
Comminution time: 9 minutes.



Vibrating grinder VGE

DISC GRINDERS

Disc grinders are designed for comminution of samples of bulk materials to a fine-grained state. In disc grinders, comminution occurs by means of abrasion – simultaneous compressive and shear strain of material particles between fixed and moving discs. The grain size of the comminuted product is regulated by the gaps between the discs (openings) and the physical properties of the material.

The Disc grinder **DG 65** is designed for comminution of small samples weighing up to 1.0 kg for analytical studies with strict requirements relating to sample purity: the sample is not contaminated by working parts of the grinder.

The Disc grinder **DG 175M** is a tabletop model of the **DG 175**. In addition to the reduced overall dimensions of the grinder, the method for adjusting the gap between the discs has been changed. This makes it possible to perform the adjustment while the electric motor is operating.

The Disc grinder **DG 200** is a more powerful model of the laboratory-class equipment. It can be used for comminution of small samples weighing up to 3 kg, as well as for continuous comminution, by outfitting it with 1.8L or 10L receiving containers, as well as Vibratory feeders **VF 1** or **VF 2**.

The Disc grinder **DG 250** is high-power equipment designed for busy laboratories or small production facilities.

ADVANTAGES OF DISC GRINDERS:

- Use of discs with two types of working surface: wedge-shaped (for preliminary comminution) and flat (for regrinding);
- Positioning of discs strictly parallel to one another by adjusting the position of the fixed disc;
- Discs are made of wear-resistant materials: carborundum, high-strength iron or manganese steel;
- Increased disc service life (**DG 175M**, **DG 200** and **DG 250**) due to:
  - Ability to rotate the discs 180 degrees;
  - Interchangeable moving and fixed discs;
  - Reversible operation.
- Safe operation of the grinders is ensured by:
  - Equipping the grinders with control panels;
  - Limit microswitches that prevent grinders from being started with the covers or grinding chambers open.
- Openings for monitoring the gap between the discs are provided in **DG 175M**, **DG 200** and **DG 250** stationary chambers.

INDUSTRIES

- Mining
- Metallurgical
- Construction
- Chemical

APPLICATIONS

Ferroalloys, ore, granite, marble, limestone, coal, coke, slag, diatomaceous earth, silica gel, automotive catalyst, glass, salt.

CHARACTERISTICS	DG 65	DG 175M	DG 200	DG 250
Loading door dimensions (mm)	Ø11	11x57	11x71	18x75
Maximum initial particle size (mm)*	3	4		15
Maximum hardness of comminuted material (Mohs units)	8 units	8 units**		7 units
Discharge slot adjustment range (mm)	0,05-2	0,07-5	0,1-5	
Average crushed product particle size at minimum aperture (mm)	90%<0,05	90%<0,071	90%<0,1	
Maximum output (kg/hour)	5	50	150	300
Electric motor power (kW)	0,37	2,2	2,2	4,0
50 Hz supply voltage (V)	220	380		
Receiving container volume (L)	0,3	1,1	1,2 (8)	8
Overall dimensions (Length x Width x Height) (mm)	350x225x300	625x375x485	630x410x925	930x410x935
Weight (kg)	21	83	135	160
Disc material	SiC	GJN-HV600(XCr14)/UNS J91109 with tungsten carbide inserts		GJN-HV600(XCr14)/ UNS J91109

* The maximum allowable size of the initial material depends on its physical properties.
** When using tungsten carbide inserts discs

Disc diameters 65, 175, 200 and 250 mm

ADVANTAGES OF DG 65:

- Comminution of super-hard materials using carborundum discs;
- No contamination of sample, because the charging funnel and receiving container are made of polyamide;
- Connection to 220 V circuit;
- Tabletop placement;
- Ability to operate “under debris” – without adding feed material;
- Adjustment device makes it possible to set the gap between the discs with a high degree of precision.

The Disc grinder **DG 65** is designed for comminution of small samples weighing up to 1.0 kg for analytical studies with strict requirements relating to sample purity – the sample is not contaminated by working parts of the grinder.

Disc grinder DG 65

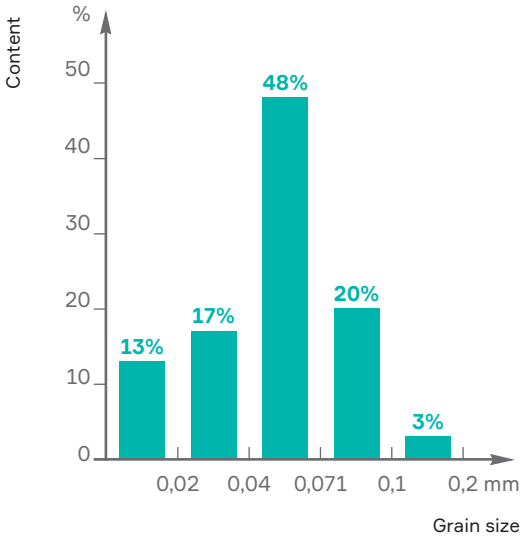
DG 65 charging funnel, receiving container and discs

Device for adjusting the gap between the discs

Comminution on DG 65

Material: Ferrotitanium FeT35C7 <2.0 mm

Output: 1.5 kg/hour



The Disc grinder **DG 175M** is a tabletop model of the **DG 175**. In addition to the reduced overall dimensions of the grinder, the method for adjusting the gap between the discs has been changed. This makes it possible to perform the adjustment while the electric motor is operating.

Disc grinder **DG 175M** on support stand **T 70**

ADVANTAGES OF DG 175M:

- Tabletop placement;
- Quick-release stainless steel receiving container;
- Discs with tungsten carbide inserts;
- The method for adjusting the gap between the discs makes it possible to set a minimum gap (without disc contact) while the grinder is operating;
- Integrated control panel;
- Support stand.

DG 175M with hinged chamber open

Disc with tungsten carbide inserts

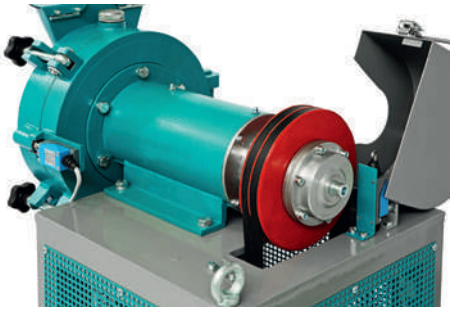
DG 175M receiving container

The Disc grinder **DG 200** is a more powerful model of the laboratory-class equipment. It can be used for comminution of small samples weighing up to 3 kg, as well as for continuous comminution, by outfitting it with 1.8L or 10L receiving containers, as well as Vibratory feeders **VF 1** or **VF 2**.

ADVANTAGES OF DG 200:

- Discs with enlarged parallel zone;
- Equipped with various receiving containers with volume of 1.8 L and 10 L;
- Belt tensioner;
- Adjustment of feed rate using Vibratory feeders **VF 1** or **VF 2**.

Grinder **DG 200** with 10L receiving container, Vibratory feeder **VF 1** and **control panel**



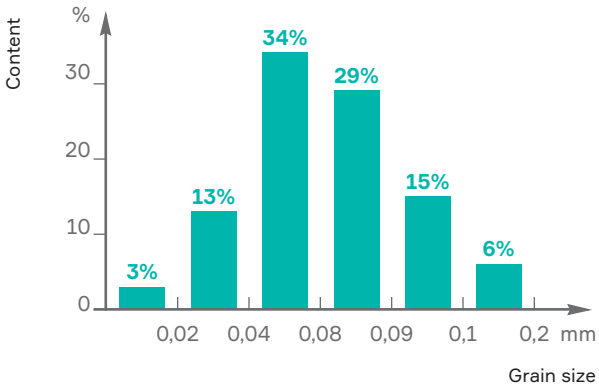
DG 200, DG 250 drive

DG 200, DG 250 containers

Comminution on DG 200

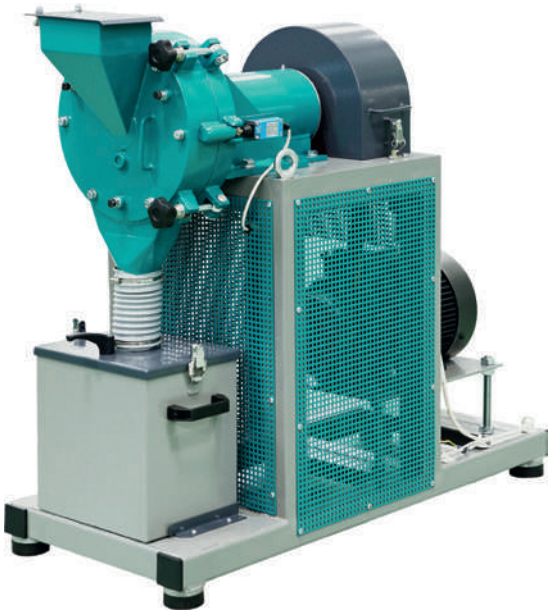
Material: Copper slag <5.0 mm

Output: 18 kg/hour



Disc Grinders

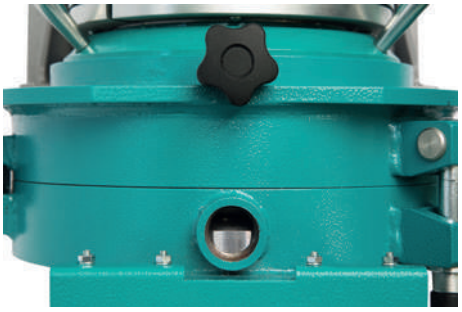
The Disc grinder **DG 250** is high-power equipment designed for busy laboratories or small production facilities.



DG 250 with 10L receiving container

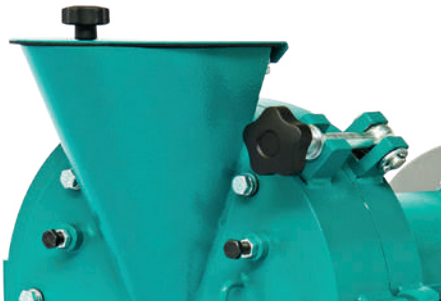
ADVANTAGES OF DG 250:

- Discs with enlarged parallel zone;
- 4 kW high-power electric motor;
- Adjustment of feed rate using Vibratory feeders **VF 1** or **VF 2**;
- Use of dust collector with exhaust hood to reduce dust.



Opening for monitoring gap between discs

Control panel on support post



View of hinged chamber

SOIL GRINDER

SG 1

The SG 1 soil grinder is designed to grind dry soil samples without comminuting plant inclusions and stones. Soil comminution in the grinder occurs as a result of material particles being crushed by rollers. The grain size of the comminuted product is regulated by the size of the discharge grating openings and depends on the physical properties of the material.

Soil grinder **SG 1**
on Stand with collecting bin
and Control panel
(recommended set)

ADVANTAGES

- Grinding of soil components in a sample without overmilling;
- Adjustment of product grain size due to:
  - o replaceable discharge grates;
  - o adjustment of gap between rollers and grate.
- Discharge grate with conic openings;
- Easy cleaning due to:
  - o folding discharge funnel;;
  - o easily removable support with attached discharge grate;
- Two discharge modes:
  - o to the receiving container (volume 2 L);
  - o to the custom containers mounted in the box adapter;
- 90° rotation and locking of chamber for maintenance and adjustment of roller position;
- Sealing of the charging funnel reduces dust during operation;
- A nozzle for connecting the dust removal system;
- Reduction of vibrations transmitted to the floor due to shock absorbers;
- Possibility to equip with the Control panel;
- Possibility to equip with the Stand with collecting bin.

CHARACTERISTICS

Loading door dimensions (mm)	37x145
Maximum initial material grain size (mm)	20
Size of discharge grate openings (mm)*	1 and 2
Average comminuted product particle size with grate with 1 mm opening (mm)	100%<1,0
Maximum output (samples/hour)	40
Gear motor power (kW)	0,75
50 Hz supply voltage (V)	380
Overall dimensions without / with Stand and Control panel (Length x Width x Height)(mm)	640x465x720 / 690x645x1315
Weight without / with Stand and Control panel (kg)	60 / 140
Roller material – tool steel	AISI 1066, AISI 01, DIN 150Cr14

*Grates with other opening dimensions can be manufactured to order.

OPERATING PRINCIPLE

A soil sample is fed through the charging funnel to the comminution chamber, where it enters the space between the rollers and the discharge grate.

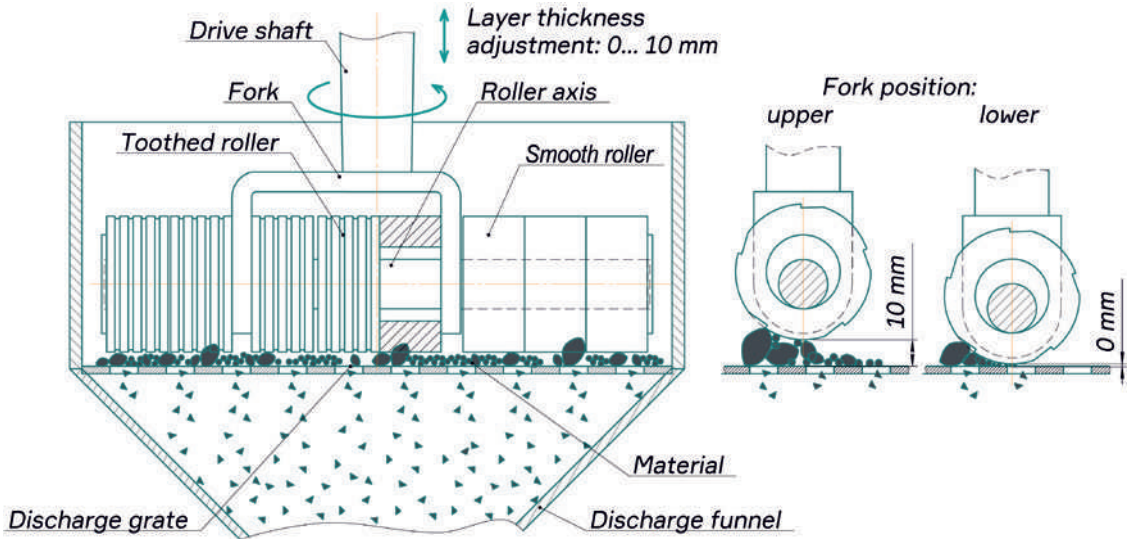
When the gear motor is started, the forks and roller axle begin to rotate, and the rollers (both smooth and toothed) roll over the soil layer, gradually comminuting the sample.

Soil particles are comminuted to 1 or 2 mm (depending on the grate installed) and pass through the opening in the grate to the receiving container.

APPLICATIONS

Peat, red soil, black soil.

Solid inclusions (plants, stones) are not comminuted and remain on the grate without fouling the comminuted sample.



Soil grinder **SG 1** operating scheme

Discharge grate, smooth and toothed rollers

Plastic receiving container and box adapter for custom containers

Drive shaft, fork and rollers on axis

PLANETARY BALL MILL

PBM 1-4

PBM 1-4 planetary mill is designed for fine grinding of materials of different hardness in batch mode. The grinding can be performed dry or wet. The mill is produced by VIBROTECHNIK LLC according to the design documentation and under the supervision of its developer Vladimir Kochnev.

In a planetary mill, grinding occurs due to impact destruction during the motion of balls, as well as abrasion - simultaneous compression and shear deformation. The size of the crushed material particles depends on the running time of the mill, the physical properties of the material, the volume of material loaded, as well as the volume of balls loaded. Recommended volume of material loaded in one bowl: 15 - 45 cm^3, recommended volume of balls loaded in one bowl: 50 - 130 cm^3.

PBM 1-4 planetary mill can be used as a mixer for the preparation of emulsions, suspensions and slips.

Planetary Ball Mill **PBM 1-4**

INDUSTRIES

- Mining
- Metallurgical
- Construction
- Chemical
- Pharmaceutical
- Food

CHARACTERISTICS

Maximum initial material grain size, mm	3
Axis arrangement	vertical
Mohs hardness of grinded material, up to	8
Loading volume of one bowl, cm^3	15-45
Number of bowls	4
Full volume of one bowl, cm^3	230
Centrifugal acceleration, g	up to 30
Grinding time to obtain a particle size of 90% <1 μm, min	30
Electric motor power, kW	1,5
50 Hz supply voltage, V	220
Overall dimensions (Length x Width x Height) (mm)	695x460x545
Weight, kg	130
Bowls material – tool steel	5140H

Planetary ball mill

APPLICATIONS

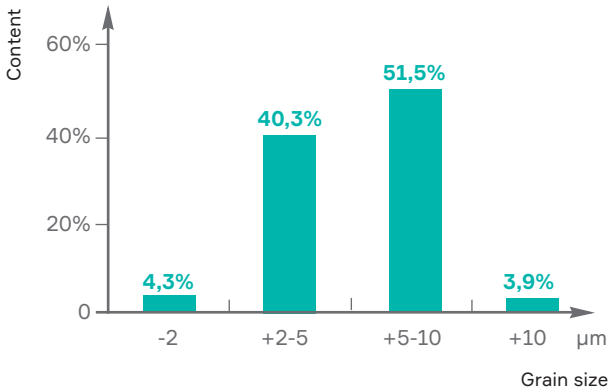
Ferroalloys, ores, granite, marble, limestone, coal, corundum, coke, slags, terra silicea, zirconium dioxide, silica gel, glass, automotive catalyst, aluminum oxide.

ADVANTAGES

- Effective grinding of the sample due to the planetary-centrifugal acceleration of grinding balls and crushed material up to 30g;
- Fixing of the bowls with a quick-release device;
- 220 V supply voltage;
- Built-in control panel with timer;
- Simultaneous grinding of four samples up to 45 cm^3 each, total sample volume up to 180 cm^3;
- Possibility of grinding material in four bowls or in two opposite ones;
- Toothed belt drive ensures high reliability and low noise;
- The end switch excludes start-up of the mill with the cover open.

PBM 1-4 platform with bowls

Grinding at PBM 1-4
Material: Electrocorundum
Output: 24 samples / hour



Built-in control panel with timer

PBM 1-4 bowl

CUTTING MILLS

Cutting mills are designed to comminute fiber, polymer and plant materials. In cutting mills, comminution occurs by means of cutting – shear strains of material particles between rotor blades and a housing. The grain size of the comminuted product is regulated by the openings in the discharge grate and the physical properties of the material.

The **CM 120** cutting mill is laboratory-class equipment designed for comminuting small batches of material with grain size up to 20 mm. The **CM 120** effectively comminutes fiber materials by crushing them with a plunger through a vertical shaft.

CM 120M is a tabletop modification of **CM 120** cutting mill.

The **CM 250** cutting mill is high-power equipment designed for busy laboratories or small production facilities.

ADVANTAGES

- Ability to obtain various comminuted material grain sizes by means of:
  - selecting the discharge grate opening size;
  - installing different numbers of blades in the housing;
  - connecting the **Cyclone dust collector** to **CM 250.**
- Increased service life of blades as a result of sharpening and replacing housing blades (**CM 120 / CM 120M**);
- Precise setting of minimum gap between the rotor blades and the housing provides shear forces on particles of the comminuted material;
- Effective loading of loose and fiber materials in the **CM 120 / CM 120M** using a horizontal tray with a pusher and a vertical shaft with a plunger;
- Equipment of the **CM 250** with receiving containers for three discharge modes: to the receiving container, through a **dust collector** and combined;
- Equipped with patterns, extractors and a special maintenance tool;
- Uniform feed of loose material using a Vibratory feeder **VF 1 (CM 120 / CM 120M)**;
- Connection of **CM 120 / CM 120M** to single- and three-phase electrical circuits.

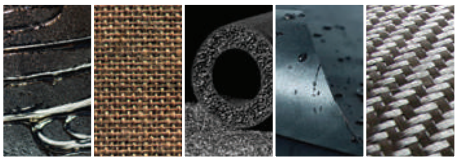
CHARACTERISTICS	CM 120	CM 120M	CM 250
Loading door dimensions (mm)	60x58	60x56	250x278
Maximum size of comminuted material (mm)	20	20	100
Size of discharge grate openings (mm)	0,8-20		2-50
Product particle size (mm)	90%<0,5		90%<2,0
Maximum output (kg/hour)	50		150
Rotor rotational speed (rpm)	1500	1500	1000
Electric motor power (kW)	1,5/1,1	1,5/1,1	7,5
50 Hz supply voltage (V)	220/380	220/380	380
Overall dimensions (Length x Width x Height) (mm)	850x550x1185	500x380x685	1525x585x1465
Weight (kg)	46	48	460
Blade material – tool steel	AISI 01, DIN 150Cr14, AISI 5135		

INDUSTRIES

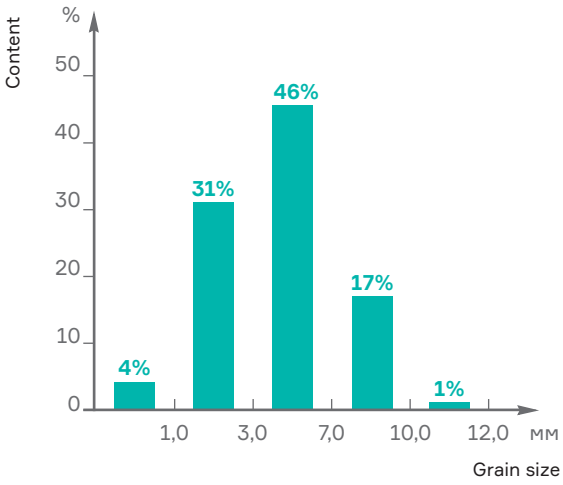
- Non-ferrous metallurgy
- Food
- Chemical
- Pharmaceutical

APPLICATIONS

Bismuth telluride, carbon fiber, PVC, polyester resin, ABS resin, CDs, SIM cards, nanotubes, collagen, rubber, jute, PAN fiber, fabric, cotton, rubber, silicon, wax, rind, chicory, dry mushrooms, tea



Comminution on CM 250
Materia: Licorice root, 50–150 mm
Output: 90 kg/hour



Cutting mill **CM 120M**

Cutting mill **CM 250** with gate and **dust collector** adapter

SIEVING EQUIPMENT

LABORATORY SIEVES

Options for sieve surfaces: screen or perforated sheet

Screen material: brass, bronze, stainless steel or polyamide

Shape of stainless steel sheet apertures: round, square or slotted

ADVANTAGES:

- Accurate and reproducible sieving results;
- Sieves are manufactured in conformity with technical specification ISO 3310.1, ISO 3310.2;
- Sieve frame are made of food-grade stainless steel grade AISI 321, 0.55 or 0.8 mm thick;
- Beads and raised edges increase frame rigidity;
- Sieves are supplied with increased height and intermediate rings;
- Sieves **S 20/50, S 20/100, S 30/50, S 30/100, S 40/70, S 40/140** и **S 50/70** are equipped with shock-absorbing sealing rings.

CHARACTERISTICS	S 12/38	S 12R	S 20/38	S 20/50	S 20/100	S 20R	S 30/50	S 30/100	S 40/70	S 40/140	S 50/70
Inner frame diameter (mm)	120	100	200	200	200	200	300	300	400	400	500
Mesh size (mm)	0,02-10,0	0,02-2,5	0,02-4,0	0,02-10,0	1,0-10,0	0,02-2,5	0,04-10,0	1,0-10,0	0,2-10,0	1,0-10.0	0,315-10,0
Size of apertures in perforated plate (mm)	0,8-50,0	*	*	0,8-100,0		*	0,8-150,0		0,8-200,0	0,8-300,0	0,8-400,0
Weight (kg)	0,15	1	0,2	0,6	0,7	1,9	0,8	1	2	3	3,2
Weight sieve with perforated plate (kg)	0,2	*	*	0,8	0,9	*	0,9	1	2,5	4	3,2
Maximum sample weight (kg)	0,1		0,15	0.2	0,5	0,2	0,3	0,75	0,6	1,0	1,0
Maximum load on sieve with perforated plate (kg)	0,3	*	*	0,5	0,5	*	1,0	1,0	2,0	2,0	3,0

* The design of the sieves does not require the use of a perforated plate sieve element.

APPLICATIONS

Diamonds, ferroalloys, ore, metal powders, coal, slag, glass, ceramic, polymers, peat, cereals, herbs, coffee.

Sieve **S 12/38** with brass mesh

Sieve **S 20/38** with bronze mesh

Test Sieve **S 20/50T** with stainless steel mesh

Sieve **S 30/50** with slotted holes

Sieve **S 40/140** with square perforation

Sieve **S 50/70** with round perforation

Sieve **S 20R** with polyamide mesh on Ø200 mm tray

Mesh size of metal fabric screens

Cell size, (mm)	0,02	0,032	0,04	0,045	0,05	0,056	0,063	0,064	0,071	0,074	0,08	0,09	0,094
Material	s.steel	s.steel	bronze, s.steel	bronze	bronze	bronze, s.steel	bronze, s.steel	s.steel	brass, s.steel	s.steel	brass, s.steel	brass	s.steel
Cell size, (mm)	0,1		0,112		0,125	0,14	0,16	0,18	0,20	0,25	0,28	0,315	0,355
Material	brass, s.steel		brass		brass, s.steel	brass, s.steel	brass, s.steel	brass	brass, s.steel		brass	brass, s.steel	
Cell size, (mm)	0,40		0,45		0,50	0,56	0,63	0,70	0,80	0,90	1,00	1,10	1,20
Material	brass, s.steel		brass, s.steel		brass, s.steel	brass	brass, s.steel					s.steel	s.steel
Cell size, (mm)	1,25		1,40		1,60	1,80	2,00	2,20	2,50	2,80	3,20	3,50	4,00
Material	brass, s.steel		s.steel		brass, s.steel	s.steel	brass, s.steel	s.steel	brass, s.steel	s.steel			

Size and shape of apertures in perforated plate

Diameter (mm)	0,8	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	5,6
	6,0	6,5	7,0	7,5	8,0	9,0	10,0	11,0	12,0	12,5	13,0	14,0
	15,0	16,0	17,0	18,75	20,0	22,5	25,0	30,0	31,5	35,0	40,0	45,0
	50,0	55,0	60,0	63,0	70,0	80,0	87,5	100,0	125,0	150,0	200,0	300,0
Side of square (mm)	3,15	3,5	4,0	4,5	5,0	5,6	6,0	6,3	7,0	8,0	9,5	10,0
	11,2	12,0	12,5	13,0	15,0	16,0	18,0	19,0	20,0	22,4	25,0	31,5
	31,5	32,0	34,0	37,5	40,0	45,0	50,0	60,0	63,0	80,0	120,0	130,0

Size of slotted holes

Slotted hole, mm	1,0x20	1,5x15	1,5x20	1,7x20	1,8x20	2,0x20	2,2x20	2,4x20	2,5x20
	2,6x20	2,7x20	2,8x20	3,0x20	3,2x20	3,5x20	4,0x20	5,0x20	7 x 20
	7,5x20	8x20	8x30	8x32	10x20	10x40	12x20	12x40	18x30

Polyamide mesh cell sizes

Cell size, (µm)	29	35	46	56	57	62	67	74	82	87
	93	99	100	106	112	114	118	122	125	130
	132	134	140	142	144	150	157	160	163	180
	195	200	206	212	224	250	265	300	315	335
	355	363	390	425	450	475	500	512	560	600
	670	710	800	850	950	1000	1180	1680		

SIEVE SHAKERS

The Sieve Shakers are designed for intermittent dry sieving of bulk materials according to particle size.

The Sieve Shaker consists of a vibration drive with a set of sieves installed, a tray, a cover and a device for fastening the sieves. The type of vibration drive, the number of sieves, and the intermediate rings and trays are selected depending on the order and according to the size of the mesh or the apertures in the perforated plate.

ADVANTAGES:

- High quality, confirmed by 100 Best Products in Russia and Made in St. Petersburg awards;
- Accurate, reproducible sieving results;
- Vibration drives equipped with shock absorbers to cancel out the vibration which occurs during operation;
- Made of materials permitted to come into contact with food products;
- Sieve Shakers on base Vibration drive **VD 30**, Vibration drive **VD 30T** and Vibration drive **EVD** are equipped with **T 80** support stands; Sieve Shakers on base Vibration drive **VD 50** are equipped with **T 40** support stand and control panels;
- Small size and low weight;
- Low noise.

Technical characteristics of Sieve Shakers

CHARACTERISTICS		S 12	S 12R	S 20	S 20R	S 20x4	S 30		S 40	S 50
Sieve diameter (mm)		120	120	200			300	300	400	500
Maximum number of sieves		10	1	10	1	4x10	6	12	10	8
Type of vibration drive		VD 30, VD 30T, EVD				VD 50	VD 30, VD 30T, EVD	VD 50		
Vibration frequency (vibrations/ minute)	VD 30, VD 30T	1500				-	1500		-	-
	EVD	1200-1800				-	1200-1800	-	-	-
	VD 50	-				1500	-	1500		
Maximum overall dimensions (mm):	Length	390	390	390	390	560	390	565	576	721
	Width	350	350	350	350	550	350	-	-	585
	Height	684	306	760	335	1000	650	1155	1236	1100
Maximum weight (kg)	VD 30, VD 30T	23	22	26	23	-	28	-	-	-
	EVD	43	42	46	43	-	48	-	-	-
	VD 50	-	-	-	-	100	-	82	136	101

Sieve Shaker **S 12**
on base **EVD**

Sieve Shaker **S 20**
on base **VD 30T**

Sieve Shaker **S 30**
on base **VD 30T**

Sieve Shaker **S 20x4**
on base **VD 50**

Sieve Shaker **S 30**
on base **VD 50**

Sieve Shaker **S 50**
on base **VD 50**

VIBROTECHNIK
Russian avant-garde equipment for milling

CIRCULAR VIBRATORY SCREENERS AND CIRCULAR VIBRATORY SCREENER UNITS ON BASE VF

The Circular Vibratory Screeners are designed for sieving bulk materials according to particle size classes.

The operating principle of the Circular Vibratory Screeners is similar to the operating principle of the analyzer, except that supply of the material to be sieved and discharge of the separate classes from the surface of the sieve and tray are continuous.

ADVANTAGES OF CIRCULAR VIBRATORY SCREENERS UNITS:

- The distance traveled by the material particles during screening exceeds the diameter of the sieves installed, which improves sieving efficiency;
- Dust discharge is eliminated;
- The Circular Vibratory Screeners is equipped with corrugated discharge hoses and plastic receiving containers;
- Efficient screening using reciprocating helical vibrations of platform;
- Supply of elastic discharge hoses that do not distort the vibrations, for connecting pipes to receiving containers.

ADVANTAGES OF GR UNITS WITH VF:

- Uniform feed of material to upper sieve of Screener;
- The material feed rate is adjusted by:
  - moving the slide gate in the feed hopper;
  - changing the amplitude of the feed tray vibrations making it possible to change the thickness of the material layer in the tray.
- Sealed connection of feeder, sieving elements and receiving containers;
- Increased output of Circular Vibratory Screeners **CVS 40** and **CVS 50** through simultaneous loading of material into several identical sieves on one sieving column.
-

CHARACTERISTICS		CVS 30		CVS 40	CVS 50	CVS 30 with VF 1	CVS 40 with VF 1 CVS 50 with VF 1	CVS 50 with VF 2
Sieve diameter (mm)		300	300	400	500	300	400, 500	500
Maximum number of sieves		5	12	10	8	5	8	8
Vibration frequency (vibrations/minute)		1500						
VF feeder hopper volume (dm^3)		-				9		66
Type of vibration drive		VD 30	VD 50			VD 30	VD 50	
Overall dimensions, mm	Length	390	576	576	690	810	620	660
	Width	350	-	592	550	400	1065	1175
	Height	550	1155	1305	1100	1000	1425	1650

Circular Vibratory Screeners and Circular Vibratory Screener units on base VF

Circular Vibratory Screener **CVS 30**

Circular Vibratory Screener **CVS 40**

Circular Vibratory Screener unit with Vibratory feeder **VF 1**

Pipe and skirt of sieve **CVS 50**

Circular Vibratory Screener **CVS 50** with double output and simultaneous loading into 2 sieves

TRAYS, LIDS, SIEVE FASTENERS

TRAYS

Material particles that have passed through all sieves of the sieving column are discharged to the analyzer trays.

Intermediate trays are designed for the installation of several identical sets of sieves in one sieving column.

The sieve shaker trays are designed for continuous discharge into the receiving container of the material that has passed through the lower sieve.

Trays with diameter of 120, 200, 300 and 500 mm

Trays for sieve shakers **CVS 30** and **CVS 50**

LIDS

The Sieve shaker and Circular Vibratory Screeners lids are designed to reduce the dust level; in addition, the Circular Vibratory Screeners lids are designed for loading material into the top sieve. There are four designs for the **CVS 30, CVS 40** and **CVS 50** lids:

- with a funnel for portioned loading of material;
- with a pipe for sealed connection of an elastic hose;
- with a membrane for loading material through a rigid hose;
- with a water supply for wet sieving.

Lids with diameter of 120, 200, 300 and 500 mm

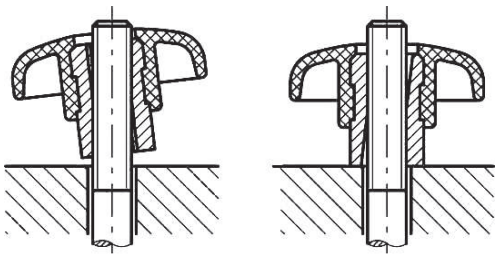
CVS 30 lid with pipe and membrane,
CVS 50 lid with funnel

SIEVE FASTENERS

The sieve fastener **UKS** is designed to secure a sieve column of arbitrary height on a vibration drive platform. In addition to the sieve fastener **UKS**

ADVANTAGES OF UKS:

- Use of industrial fittings that ensure convenient use and durability of the sieve fasteners;
- The main element of the sieve fastener, the cross piece, has two guide bushes that reduce the likelihood of it skewing;
- The cross piece has a square cross section to prevent deformation;
- The **UKS** knobs do not have continuous threads, but rather beveled threads, which eliminate the need to twist the knobs on the threaded pegs and reduce the time required to secure the sieve column when its height is changed;



UKS knob

Sieve fastener **UKS**

SIEVE CASE

The **S 50** sieve case is designed to store five **S 50** or **CVS 50** sieves.

ADVANTAGES:

- Compact storage of **S 50** and **CVS 50** sieves, trays, lids and intermediate rings;
- Wooden inserts prevent the sieves from coming into contact with metal parts of the sieve case;
- A handle and rollers are provided to move the sieve case.

Cassette **S 50**

DIVIDING AND REDUCTING EQUIPMENT

ROTATING SAMPLE DIVIDERS

The **Rotating Sample Divider RSDM** with **Vibratory feeder VF** is designed for uniform feed and reduction of bulk samples of rocks and ores to prepare them for analysis.

ADVANTAGES:

- Sealed connection of **Vibratory feeder VF 1** to the divider via a flexible tube;
- Variable material feed rate;
- Smooth adjustment of degree of reduction;
- Discharge of sample residues into a receiving container on a cart.

Crushing divider unit with jaw crushers **JC 6M, JC 10M** and **JC 15** are designed for crushing and reduction of samples of rocks and ores to prepare them for analysis.

ADVANTAGES:

- Simultaneous crushing and reduction of samples in a single process;
- Efficient operation by adjustment of grain-size composition of product and degree of reduction of sample within a wide range;
- Ability to carry out multiple crushing of samples to the required particle size with preservation or reduction of total weight of sample;
- Combined control panel;
- Stainless steel receiving tray with adjustable reduction;
- Latch between trays prevents sample from falling past trays.

CHARACTERISTICS	RSDM with VF	Crushing divider unit with JC 6M	Crushing divider unit with JC 10M	Crushing divider unit with JC 15
Loading door dimensions (mm)	20x85	60x100	100x200	150x250
Reduction	1/2 - 1/100			
Discharge slot adjustment range (mm)	-	2–20	3–25	1–25
Maximum initial material grain size (mm)	5	50	70	110
Electric motor power (kW)	0.5	1.1/0.3	2.2/0.3	5.5/0.3
50 Hz supply voltage (V)	220	380		
Overall dimensions (Length x Width x Height) (mm)	870x725x1120	840x760x1275	860x760x1390	1110x760x1605
Weight (kg)	180	315	455	665

Crushing divider unit with **JC 6M**

Rotating sample divider RSDM
with **Vibratory feeder VF 1**

APPLICATIONS

ferroalloys, ore, granite, marble, limestone, coal, slag, cement, glass, ceramics, medicines and pharmaceuticals

Tray for samples

Set of trays

Unloading box

RIFFLE SAMPLE SPLITTERS

Riffle sample splitters are designed to divide samples of bulk materials into two parts of equal size and with equal content. Riffle sample splitters RSS 5, RSS 10, RSS 15, RSS 20, RSS 25, RSS 37,5 and RSS 50 differ in the riffle width, sample receiver volume, and maximum particle size of the material to be divided.

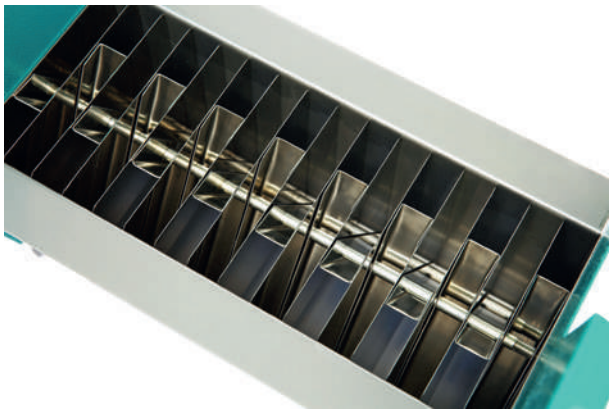
ADVANTAGES

- The splitting unit, sample collectors and charging shovel are made of stainless steel AISI 321;
- The detachable design allows full cleaning of the splitter;
- Low weight.

SPECIFICATIONS	RSS 5	RSS 10	RSS 15	RSS 20	RSS 25	RSS 37,5	RSS 50
Riffle width, mm	5	10	15	20	25	37,5	50
Material feed size, mm, maximum	1,5	3	5	6,5	8	12,5	16,5
Number of riffles	20	16			20	14	10
Full / useful volume of sample collectors, L	3x0,77 / 3x0,5	3x1,2 / 3x0,78	3x4,8 / 3x3,1	3x9,6 / 3x6,3	3x17,5 / 3x12,5		
Overall dimensions, mm (Length x Width x Height)	258x161x220	258x218x220	434x299x343	522x403x403	600x546x403		
Overall dimensions of the 3rd sample collector, mm (Length x Width x Height)	127x110x116	167x127x116	247x216x194	328x257x249	510x270x261		
Weight of a splitter with 3 sample collectors, kg	3,55	4,2	13,3	18,7	27,5	26,5	26,5
Material of splitting unit and sample collectors	08X18H10T (AISI 304)						

EXAMPLES OF USE

Any dry bulk materials: ferroalloys, ore, granite, soil, sand, coal, glass



Splitter riffles

RSS 5, RSS 10, RSS 15, RSS 25, RSS 37,5 and RSS 50

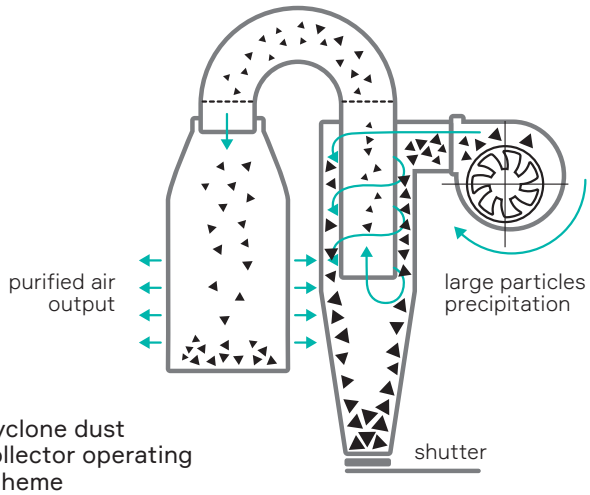
SPECIAL PROCESS EQUIPMENT

CYCLONE DUST COLLECTOR

The cyclone dust collector is designed to create an air flow that captures the duct fraction of the material crushed and settles it in a cyclone and bag filter.

The primary components of the product are a fan, cyclone with shutter, frame and bag filter. The support structure has wheels equipped with brakes for moving the dust collector.

The cyclone dust collector has an adjustable exhaust hood for use as a local exhaust unit. The exhaust hood can be used as an air intake in both the loading zone and discharging zone.



Cyclone dust collector operating scheme

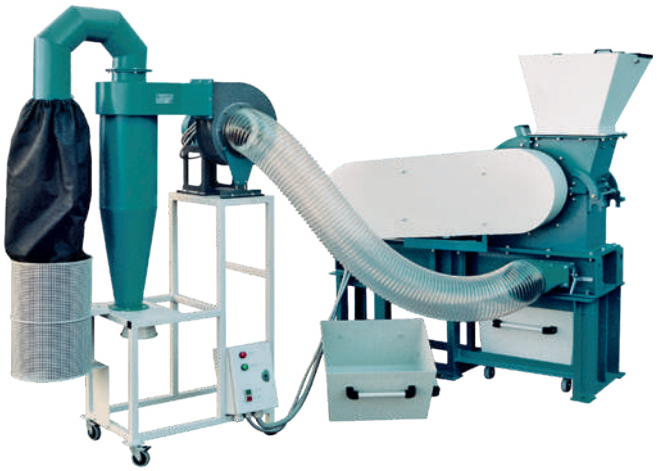
Cyclone dust collector

CHARACTERISTICS	DUST COLLECTOR	DUST COLLECTOR WITH HOOD
Applications	DRC 200x125, HM 2x2, HM 5x2, HM 5x5, JC 6M, JC 10M, JC 15, CM 250	Maximum equipment height 1700 mm
Type of fan	VTs 14-46	
Rotational speed, rpm	3000	
Electric motor power (kW)	1,5	
Air flow rate (thousand m3/hour)	400...600	
Connected hose diameter (mm)	70, 200	200
Head (Pa)	1200	
50 Hz supply voltage (V)	380	
Overall dimensions (Length x Width x Height)	1335x485x1855	1605x1245x2085
Weight (kg)	103	123
Bag filter material	Ozon-16 filter fabric, spunbond	

ADVANTAGES

- Cleaning the dust fraction larger than 15 µm from the air flow;
- Periodic discharging of material from the cyclone through a gate;
- Connection of the **cyclon dust collector** to two types of hose:
  - Ø70 for **DRC 200x125**, **HC 2x2**, **JC 6M**, **JC 10M** and **JC 15**;
  - Ø200 for **HC 5x2**, **HC 5x5** and **CM 250**;
- Connection of the **cyclon dust collector** to several units of equipment via T-joints;
- Use of the **cyclon dust collector** with hood as a local exhaust;
- Pneumatic classification of material into two fractions: fine in bag filter and coarse in the cyclone;
- The **cyclon dust collector** is a closed-loop device: all of the purified air is returned to the room.

Cyclone dust collector with hood and Jaw crusher **JC 10**



Hammer crusher **HC 5x2** with **Cyclone dust collector**

Cutting mill **CM 250** with **Cyclone dust collector**

VIBRATION TABLE VT

The VT vibration table is designed for vibration compaction of specimens of asphalt concrete mixes during testing in accordance with State Standard 12801-98 “Materials Based on Organic Binders for Road and Airport Construction. Test Methods.”

The VT vibration table is equipped with two types of molds: Ø71,4 mm for samples of fine-grained asphalt concrete and Ø101 mm for samples of coarse-grained asphalt concrete.

The primary components of the product are the vibration drive, receptacle, mold with stamps and weights and control panel.

The weight of the VT vibration table platform is selected so that the amplitude of the vibrations specified by the state standard is ensured when using both molds, without additional adjustments.

VT vibration table assembled with Ø71.4 mm mold on stand **T 80** and set of Ø101 mm spare parts, tools and accessories

CHARACTERISTICS	**VT** vibration table with **Ø71.4** mm mold	**VT** vibration table with **Ø101** mm mold
Mold inner diameter (mm)	Ø71,4	Ø101
Amplitude of vibrations under load (mm)	0,4±0,05	
Vibration (vibrations/minute)	2900±100	
Operating time (seconds)	180±5	
Vertical load (kPa)	30±5	
50 Hz supply voltage (V)	380	
Electric motor power (kW)	2x0,25	
Overall dimensions when assembled with molds, stamps and weight (Length x Width x Height) (mm)	550x550x520	550x550x660
Weight (kg)	140	156

ADVANTAGES

- The strictly vertical linear vibrations that ensure a stable position of the weights during operation and the load on the specimen specified by the state standard;
- The presence of a control panel with an integrated 3-minute timer;
- The amplitude of the vibrations specified by the state standard is ensured during operation with both molds without additional adjustments;
- Supply of lightweight molds;
- An additional receptacle for filling the molds with mix;
- Support stand.

APPLICATIONS

Asphalt concrete and sand-gravel mixes

Receptacle for filling molds with mix

VT vibration table assembled with Ø101 mm mold

Mold, upper and lower stamps, and weight for Ø71.4 mm mold

VIBRATORY FEEDERS

VF 1 and VF 2

Vibratory feeders are designed for uniform, adjustable feeding of bulk materials with grain size up to 5 mm into crushing, comminuting or sieving devices.

Vibratory feeder **VF 1**

Vibratory feeder **VF 2**

CHARACTERISTICS	VF 1	VF 2
Tray width (mm)	100	
Maximum initial material grain size (mm)	5	
Maximum output (kg/hour)	400	
Maximum tray vibration amplitude (mm)	0,2	
50 Hz supply voltage (V)	220	
Maximum power consumption (A)	0,4	
Hopper capacity (dm3)	9	66
Overall dimensions (Length x Width x Height) (mm)	595x340x445	755x660x675
Weight (kg)	20	29

ADVANTAGES

- Stainless steel charging hopper with cover and tray;
- Ability to change feeder capacity using two methods:
  - adjusting the amplitude of the tray vibrations by changing the current flowing through the coil;
  - changing the thickness of the material layer on the tray (by adjusting the position of the hopper gate).
- Equipment of the feeder with rubber shock absorbers to ensure stability in operation;
- Use of the **VF 1** and **VF 2** feeders provides:
  - Maximum crusher and grinder output;
  - Improved sieving of the shakers;
  - Minimized impact of human factor on the crushing, comminution or sieving process;
  - Increased service life of sieve shaker sieving surfaces;
  - Reduction of labor required for equipment operation;
  - Reduction of dust level when loading material.

Circular vibratory screener **CVS 50** with Vibratory feeder **VF 1**

APPLICATIONS

Any dry bulk materials: ferroalloys, ore, metallurgical powders and polymers.

Feeder control panel, latch and discharge pipe

Disk grinder **DG 200** with 10-liter receiving container, Vibratory feeder **VF 1** and control panel **MCP 3**

SHAKER MIXERS

SM 2.0 И SM 50.0

Shaker mixers **SM 2.0** and **SM 50.0** are designed for mixing bulk or liquid substances.

SM 2.0 shaker mixer is laboratory-class equipment with a cup volume of 2 liters. The distinctive feature of the **SM 2.0** is the ability to adjust the rotational speed from 10 to 75 rpm.

ADVANTAGES OF SM 2.0

- Effective mixing of the components in the cup by means of its complex three-dimensional motion;
- Mixing of components without destruction or grinding of initial components;
- Observation of operation through a transparent hinged cover;
- Control of shaker mixers using a sensor panel;
- Setting of shaker mixer operating time and cup rotational speed;
- Manual turning of the basket to insert or remove the cup;
- Cup is made of food-grade stainless steel AISI 321 or glass.

SM 2.0 shaker mixer
on Support stand **T 70**

SM 2.0 shaker mixer
control panel

SM 2.0 shaker mixer with
stainless steel and glass cups

CHARACTERISTICS	SM 2.0	SM 50.0
Cup/drum volume (dm$^{3)}$	2,6/1,7	50/33
Cup rotational speed (rpm)	10-75	49
50 Hz supply voltage (V)	220	380
Electric motor power (kW)	0,18	0,75
Overall dimensions (Length x Width x Height) (mm)	610x525x430	1155x770x1000
Weight (kg)	100	134
Cup material	Stainless steel/ Glass	
Drum material		Stainless steel

The «Drum Tumbler» SM 50.0 shaker mixer is industrial-class equipment used in busy laboratories and small industrial facilities.

ADVANTAGES OF SM 50.0 «Drum Tumbler»

- No tool (vanes) inside the drum, which makes it possible to avoid grinding and destruction of particles during mixing;
- Operation in 3 mixing modes (with different drum tilt angles) depending on the properties of the material and the volume to which the drum is filled;
- The ability to turn the drum manually to load or unload material;
- The drum is made of food-grade stainless steel AISI 321;
- The drum is sealed by means of a quick-release cover with a gasket held in place by latches;
- Operating safety of the shaker mixers is ensured by a protective housing and a limit switch;
- Equipped with MCP3 control panel in metal housing;
- Adjustable tilt angle of drum relative to its axis of rotation (15, 30, 45 and 90°).

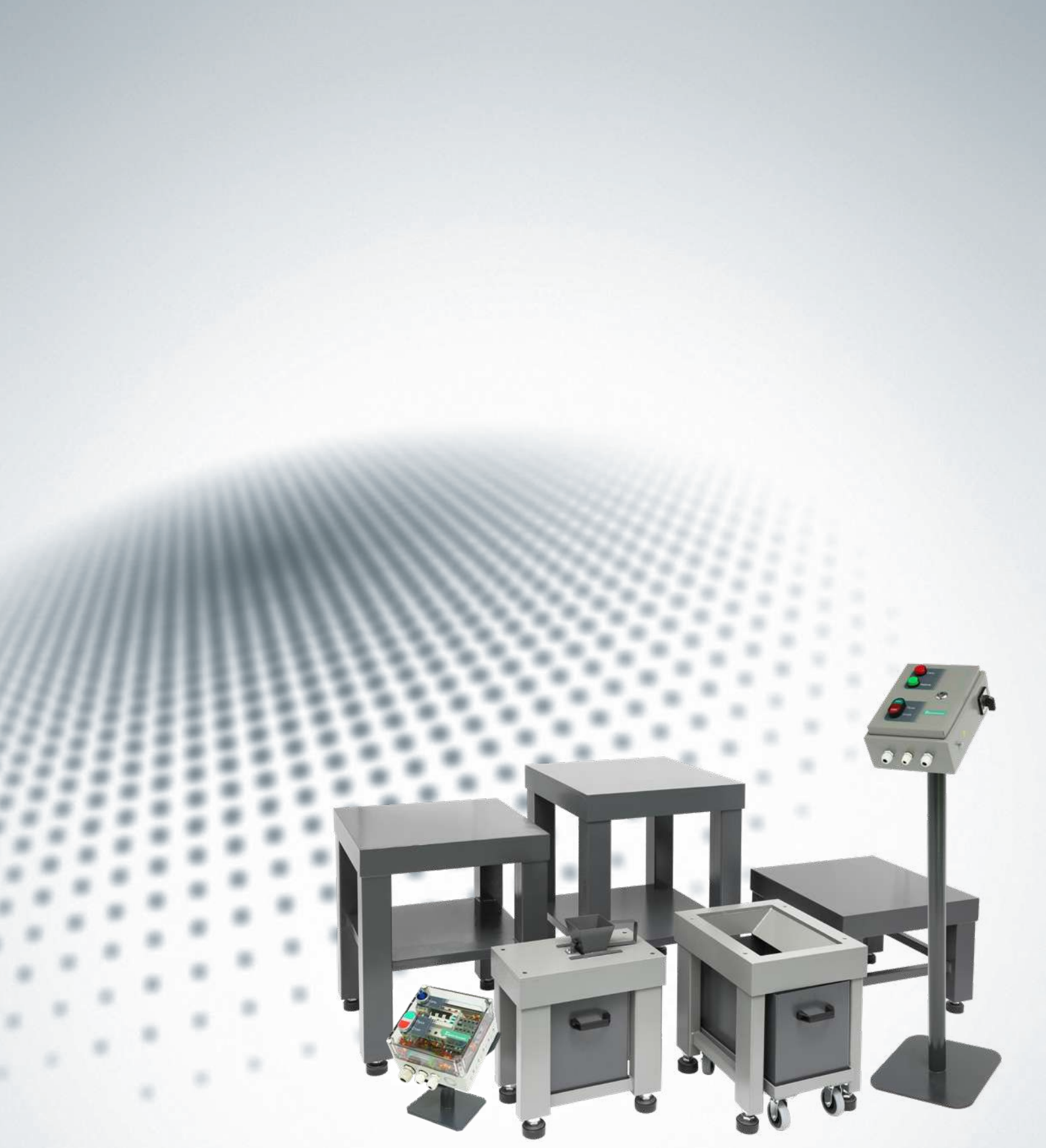
APPLICATIONS

Food additives, thermosetting plastics, reagents, sand, slag.

«Drum Tumbler» **SM 50.0** shaker mixer, drum tilt angle – 15°

«Drum Tumbler» **SM 50.0** shaker mixer in “Loading” position

«Drum Tumbler» **SM 50.0** shaker mixer in “Unloading” position



AUXILIARY EQUIPMENT

CONTROL PANELS AND SUPPORT POSTS

The control panels are designed for connecting AC induction motors to the supply circuit and for starting, protecting and shutting them off.

VIBROTECHNIK manufactures two types of control panel: **MCP** with a metal housing and **PCP** with a plastic housing.

The **PCP** control panel is designed for tabletop equipment in laboratories.

The **MCP** control panels are designed for large items operating under severe conditions. The **MCP** has modifications designed for control of process units consisting of several equipment items: the **CMCP** with two pushbutton posts.

PCP3 control panel on support post

CHARACTERISTICS	PCP1	MCP1	PCP3	MCP3	MCP3-09	MCP3-10	CMCP
Equipment model	VCM 6, DG 65	CM 120, VD 50	VCM 6, VCM 10, VG 1, SG 1, VG 6	SM 50.0, VD 50, CM 120, CM 250, JC 6M, JC 10M, JC 15, HC 2x2, DRC, DG 200, DG 250, Cyclone Dust Collector, VT	HC 5x2	HC 5x5	Crushing Divider Unit with JC, CM 250 with Cyclone Dust Collector, HC 2x2 with Cyclone Dust Collector
Supply voltage (V)	220		380				
Circuit breaker current (A)	4,13	6...13	2...6,3	3...20	32	63	5...25
Thermal overload relay current	3,2, 10	5...10	1,6...3,2	2,5...16	25	50	0,63...20
Overall dimensions (mm): Length Width Height	 205 185 130	 300 225 155	 205 185 130	 300 225 155	 230 330 165	 330 330 165	 330 225 155
Weight (kg)	2,0	4,5	2,0	4,5	6,5	6,5	4,5

ADVANTAGES

- IP 54 dust and moisture resistance rating;
- Complies with IEC 60439- 1:2004 “Low Voltage Distribution and Control Components”;
- Automatic power shutoff if the maximum permissible current is exceeded or a short circuit occurs;
- Two fuses to protect control circuit elements;
- When limit microswitches and an emergency stop button are connected, the motor is inhibited if the equipment operating rules are violated;
- The MCP has a tall post for floor mounting, while the PCP has a short post for tabletop mounting;
- Marking and assembly of control circuit wires in a bundle;
- The MCP housing and cover are made of metal 1.5 mm thick;
- The PCP housing is made of impact-resistant plastic;
- Visual observation of the position of the thermal overload relay button and circuit breaker handle through the transparent cover of the PCP.

MCP3 control panel on support post

PCP3 control panel

CMCP3 control panel on support post

SUPPORT STANDS

Support stands are designed to hold crushing and comminution equipment, analyzers, sieve shakers and mixers weighing no more than 400 kg. In addition to universal support stands, stands with integrated containers are also produced for jaw crushers JC 6M and JC 10M.

Universal support stands are produced in three sizes and are designed to hold small equipment:

- Support stand T 40 – for equipment 600–800 mm high;
- Support stand T 70 – for tabletop equipment 400–600 mm high;
- Support stand T 80 – for tabletop equipment up to 400 mm high.

ADVANTAGES OF SUPPORT STANDS

- High load-bearing capacity – at least 400 kg;
- Equipped with shock absorbers and vibration dampers;
- Adjustable height;
- Support stands T 70 and T 80 have a shelf for storing spare parts, tools and accessories;
- Support stands JC 6M and JC 10M have 10 L and 20 L collecting containers for sample collection;
- T 40, T 70, T 80 Support stands can be equipped with 4 rollers with brakes instead of shock absorbers;
- On T 40, T 70, T 80 Support stands a Support post for the control panel can be mounted.

Suport stands **T 70, T 80, T 40**
and Suport stand **JC 6M** + Suport stands **JC 10M**

MODEL	T 40	Stand JC 6M	Stand JC 10M	T 70	T 80
Equipment	VD 50, CVS 50, S 30, S 40, S 50, S 20x4	JC 6M	JC 10M	SM 2.0, VCM 6, VCM 10, DG 65, DG 175M, VG 1, VG 6, S 12, S 20, S 30, VT	
Overall dimensions (mm) Length Width Height	 575 575 420...450	 410 255 470...490	 475 370 475	 575 575 695...715	 575 575 795...815
Weight (kg)	56	28	40	68	71
Максимальная нагрузка, кг	400	200	350	400	

Jaw crusher **JC 10M**
on Support stand with collecting container and cart

Vibrating cone mill **VCM 10** on Support stand **T 70** with rollers and Support post for Control panel

Sieve shaker **S 20**
on Support stand **T 80**

LOADING SCOOPS

Loading scoops are designed to load material in crushers, grinders, sieve shakers and mixers.

ADVANTAGES

- Two sizes are produced, with volumes of 70 cm^3 and 1.2 L;
- Material: food grade stainless steel AISI 321.

Loading scoops with volumes of 1.2 L and 70 cm^3

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