



 Products & accessories

Grinding Systems

Product Overview, Technology and Application Areas

Pumps & Systems

NETZSCH Pumps & Systems

YOUR GLOBAL SPECIALIST FOR CONVEYING COMPLEX MEDIA

NETZSCH Pumps & Systems, the global specialist for conveying complex media.

We promise you Proven Excellence - outstanding performance in all areas. Designed specifically for difficult conveying situations, the products range from very small industrial metering pumps to high volume pumps for applications in the oil and gas sector or the mining industry. Our **NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, PERIPRO® peristaltic pumps, grinders, dosing equipment and accessories** offer customised, reliable solutions for your applications all over the world.

The high level of quality of our products and original spare parts is based on over 70 years of experience in development, production and distribution, which works to your benefit as our customer: The high level of reliability allows you to reduce your maintenance costs and take preventive action against unplanned downtime.

Our service and support does not end with the purchase. On the contrary – it starts well before an order is placed. From consultation, maintenance and spare parts to repairs and modernisation of your pump, we support you from the outset. And with our worldwide service network, we are here to help around the clock in the event of an emergency.



The NETZSCH product portfolio

All NETZSCH pumps can be used in a wide range of applications, for example:

- Bonding and sealing
- Chemicals
- Dosing
- Environmental technology
- Food and beverages
- Marine applications
- Mining
- Oil & gas production and transfer
- Paints and coatings
- Paper industry
- Pharmaceuticals and cosmetics
- Renewable energies
- Water and wastewater treatment



Grinding Systems protect your installation

Grinding systems are used to effectively protect your complete installation including the pumping equipment. They ensure that over-size solids are reliably reduced to a pumpable size therefore safely avoiding the danger of blockages.

Grinders and macerators are designed for the most arduous of industrial applications to prevent pipe blockage and damage to downstream equipment by reliably reducing the size of solid matter in pumped media. The extensive selection of macerating systems provides an ideal solution for many industries and processes. The robust design of the grinding systems from NETZSCH ensures a high performance coupled with trouble free operation.

Primary Applications

- Waste water treatment
- Agriculture
- Biogas plants
- Slaughterhouses and recycling plants
- Sugar factories



Optimum price/
performance ratio



Low running costs through
high operating efficiency



High operational
reliabilityefficiency



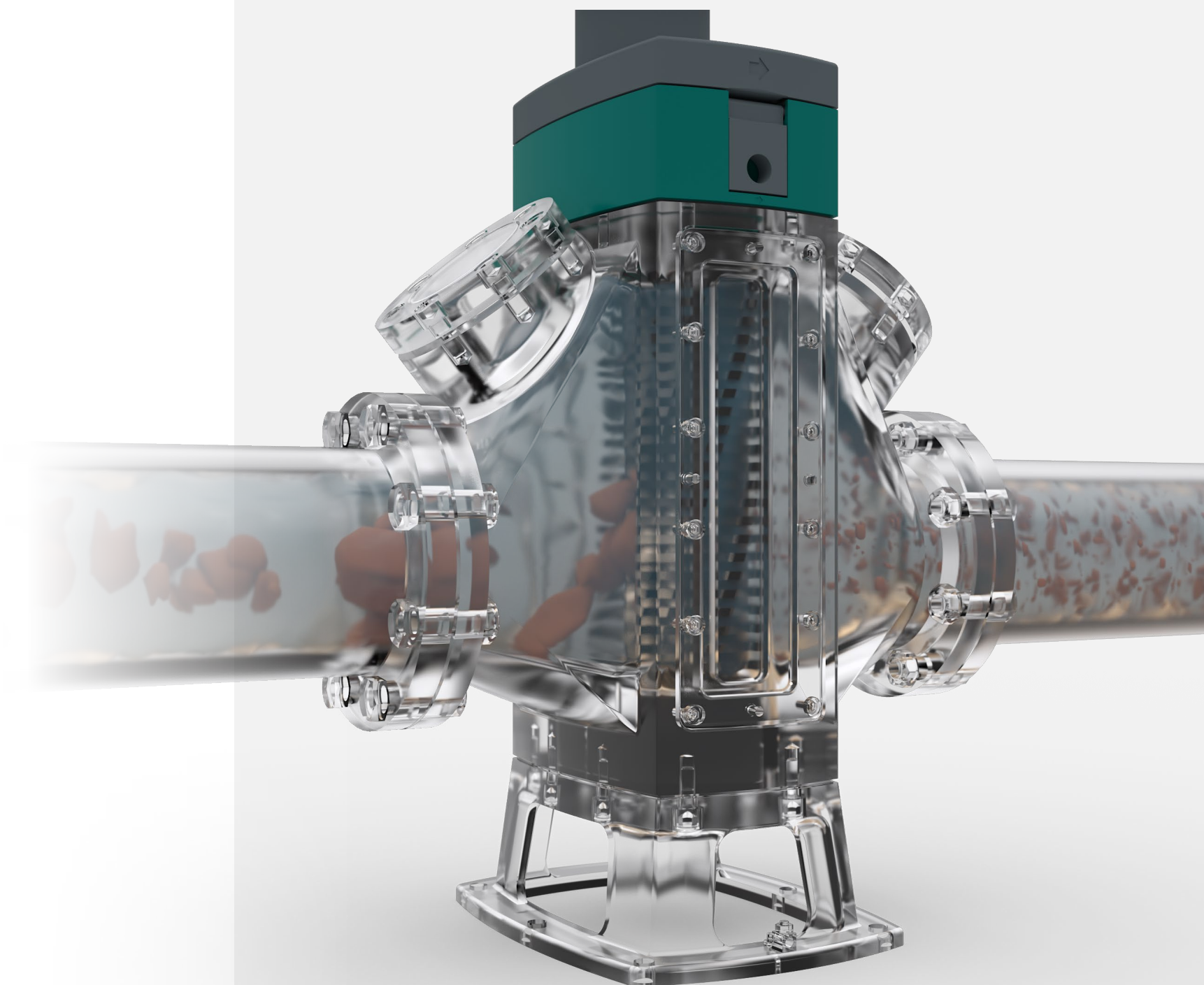
Comprehensive range of accessories
available for almost every application



Worldwide service network and
weekend emergency support



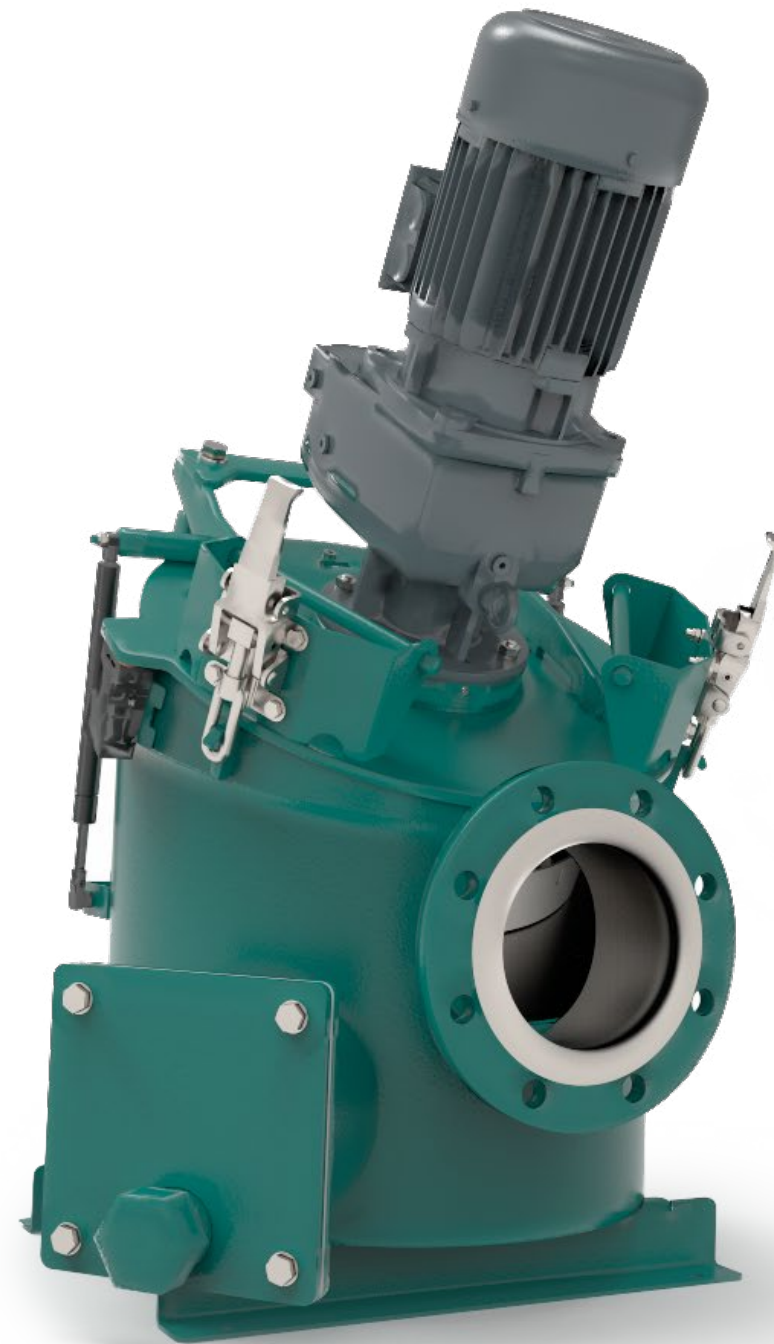
The housing of the grinders stays in the
canal during maintenance – because of
NETZSCH's "Full Service in Place"



M-Ovas® Cutting Plate Macerator

The special shape of the housing directs solid particles in the waste water towards the cutting plate, where they are held and chopped by the rotating blades. Objects such as stones can be easily removed from the integrated separator container with separate clean-out port and drain openings.

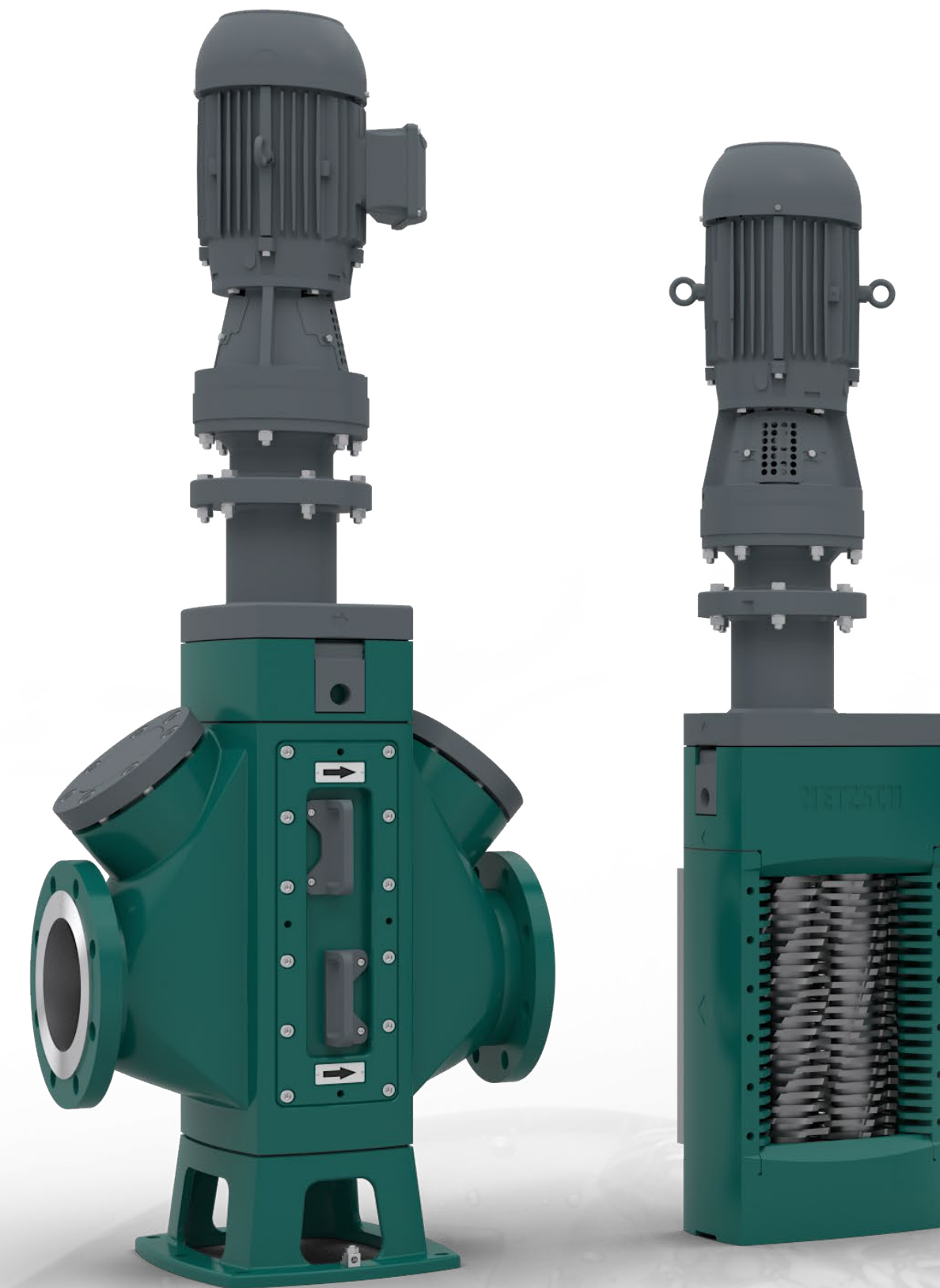
Technical details



N.Mac® Double Shaft Grinder

The double shaft grinders have been designed for applications where the medium contains large solid objects. These grinders are available in two different housing designs: the inline version for installation in pipelines and the channel version for installation into effluent channels. Depending on the size reduction required there is a choice of different tooth combinations.

Technical details



1

Housing

Hydrodynamic design with integrated stone trap for solids, and a clean-out port. The sediment can easily be removed by opening the cover plate. The housing is galvanized to ensure corrosion resistance. Available in stainless steel (optional).

2

Housing cover

Cutting unit integrated into housing cover. A gas strut is fitted to the cover to assist opening.

2a

This opening makes it easy to clean the stone trap.

3

Inline version

Product inlet and outlet are positioned on the same level. The M-Ovas® can be directly connected to a horizontal pipeline or to a pump inlet where the flange is set at 90°.

4

Shaft seal

Single mechanical seal made of hard metal with oil quench to prevent product leakage.

5

Drive

The standard drive unit has reinforced bearings.

6

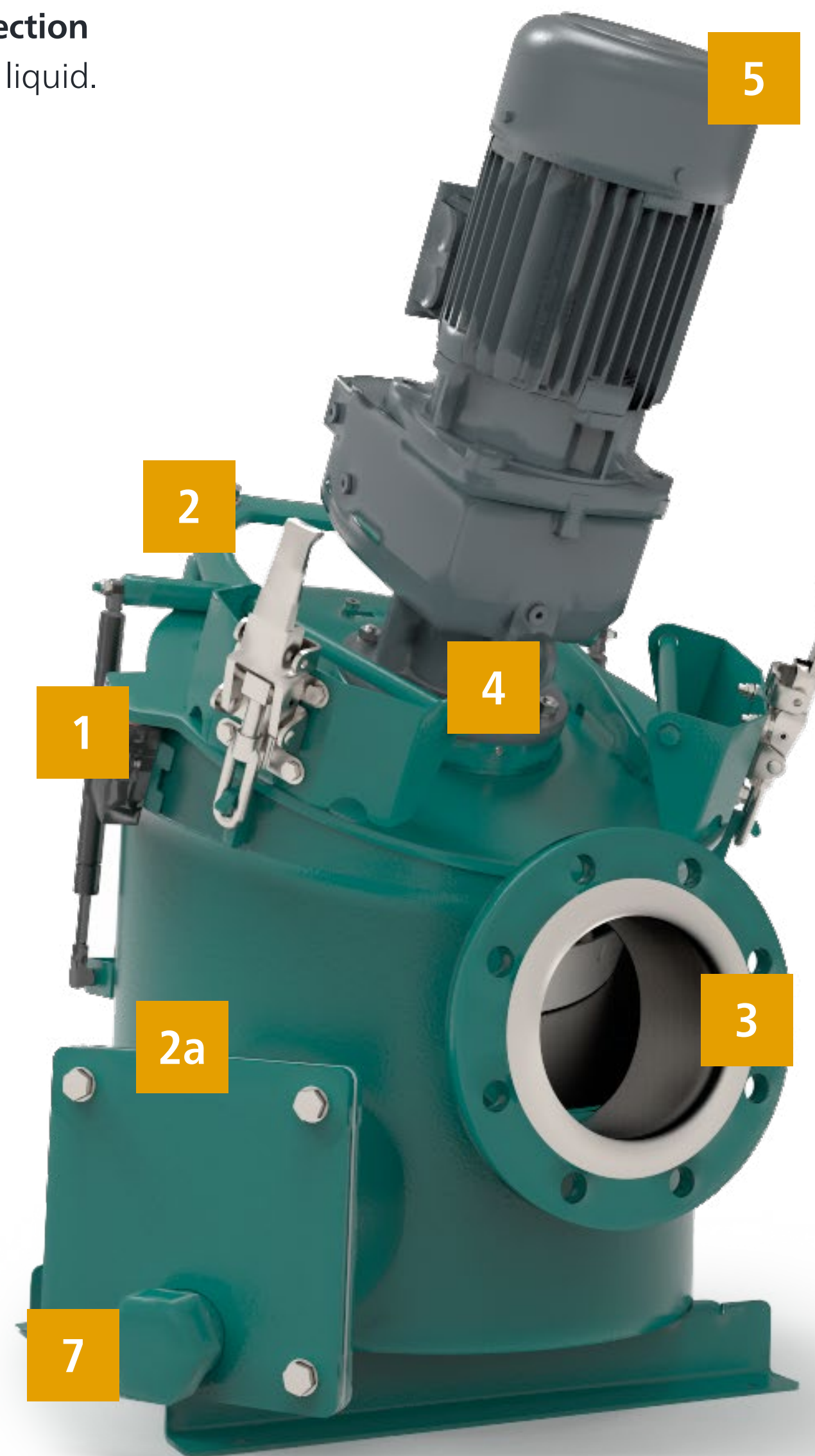
Cutting unit

The cutting plate is made of wear resistant, hardened steel. Optimum cutting performance through cutting unit with a fixed cutting mechanism. Cutting head and cutting blades made from wear resistant hardened steel. The flywheel effect of the cutting head supports the cutting process and reduces the drive power. Easy exchange of cutting plate and cutting blades without disassembling the pipework. A manual adjustment is not necessary due to the pressure spring support.

7

Draining Connection

For draining the liquid.



M-Ovas® Cutting Plate Macerator

1

Housing

Housing for pipe installation to protect against pipe blockage and damage to connected equipment.

1a

Housing

Housing for channel installation to protect against blockage and damage to following devices.

2

Cutting unit

There are different cutting blocks with special geometry for optimum crushing of the solids. To achieve the desired size reduction result, the different knife configurations with three to eleven teeth can be combined with each other. Knife configuration with seven teeth as standard. The cutting tools are hardened to increase impact resistance and sharpness, so that even the most difficult of contaminants can be shredded reliably.

3

Shaft seals

Mechanical seal with quench and patented and mechanical seal cartridges.

4

Drive

Energy-efficient motors with a power output of 2.2 are installed as standard. These offer optional control with reversal of direction of rotation for protection in the event of blockages.

5

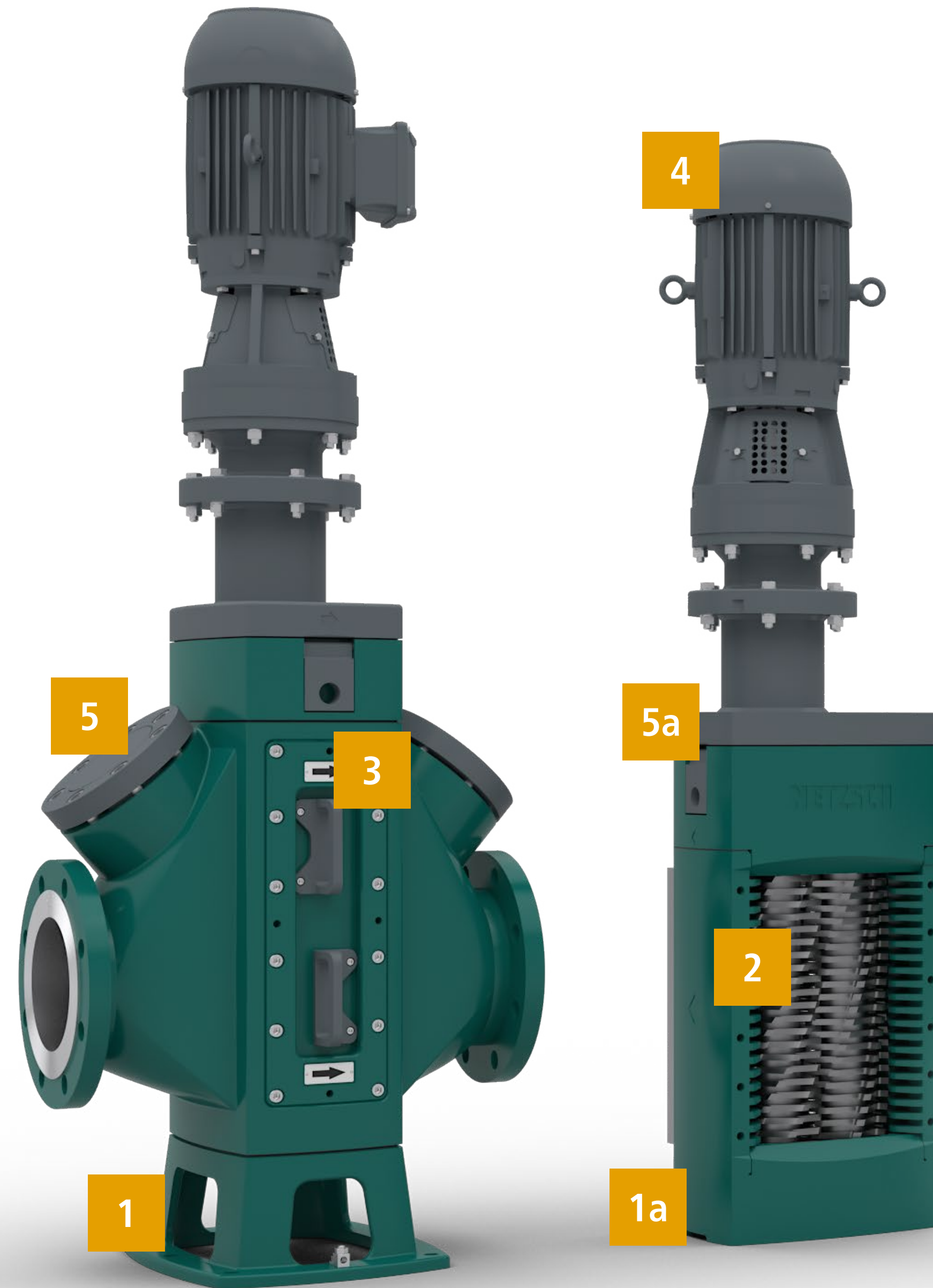
Inline-Version

Product inlet and outlet are the same height. The N.Mac® can be connected directly into a horizontal pipeline or to a suction connection of a pump rotated 90° to the side.

5a

Channel-Version

Product inlet and outlet are the same height. An extended shaft is optionally available so that the motor can be installed above the medium.



N.Mac® Double Shaft Grinder

M-Ovas[®] CUTTING PLATE MACERATOR

The M-Ovas[®] cutting plate macerator for coarse materials is ideally suited for use in wastewater and biogas treatment plants where impurities in the medium reduce process reliability. The solids in the medium are reliably macerated or separated from the medium (e.g. stones), to prevent pipes from getting blocked or damage to downstream equipment.

Design

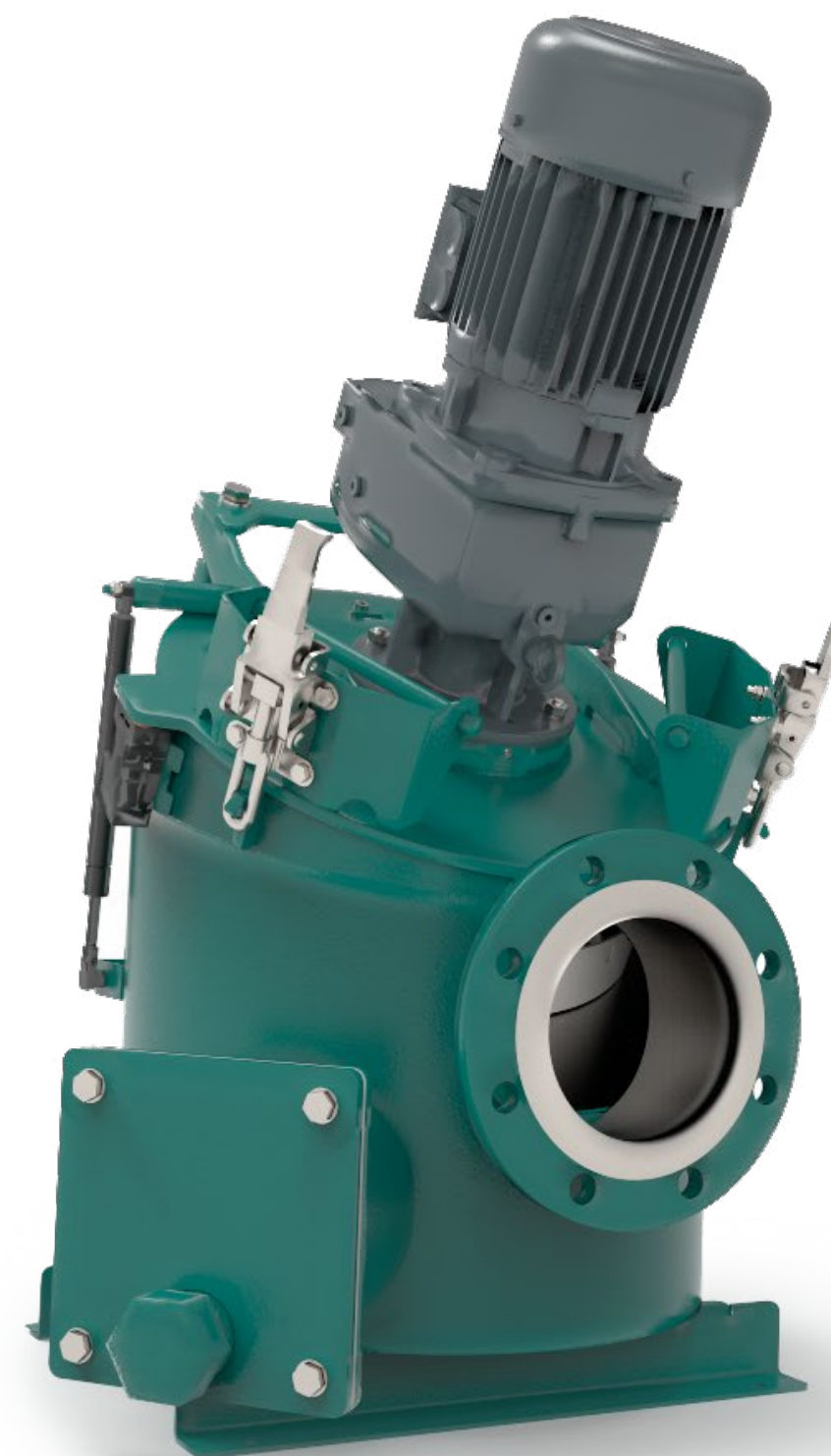
- Compact design with high throughput capacity
- Integrated separator tank with separate cleaning and drain opening
- Mechanical seal with grease lubrication
- Optionally with reversing control

Large throughout volumes

- Throughput rates of up to 300 m³/h
- Substrates with 10-12 % dry solids content

Wide range of applications

- Fermented, renewable raw materials
- Slurry
- Organic waste
- Slaughterhouse waste
- Liquid manure
- Wastewater and sludge



Advantages

- FSIP[®] "Full Service in Place"
- Quick and easy disassembly of the cutting plate
- Low energy requirement with high throughput rate
- Effortless disposal of sedimented materials thanks to easy access
- Easy maintenance on site
- Cutting plate can be used on both sides
- Different cutting plates depending on the application

Technical details

M-Ovas[®] CUTTING PLATE MACERATOR

Combinations – Many options possible

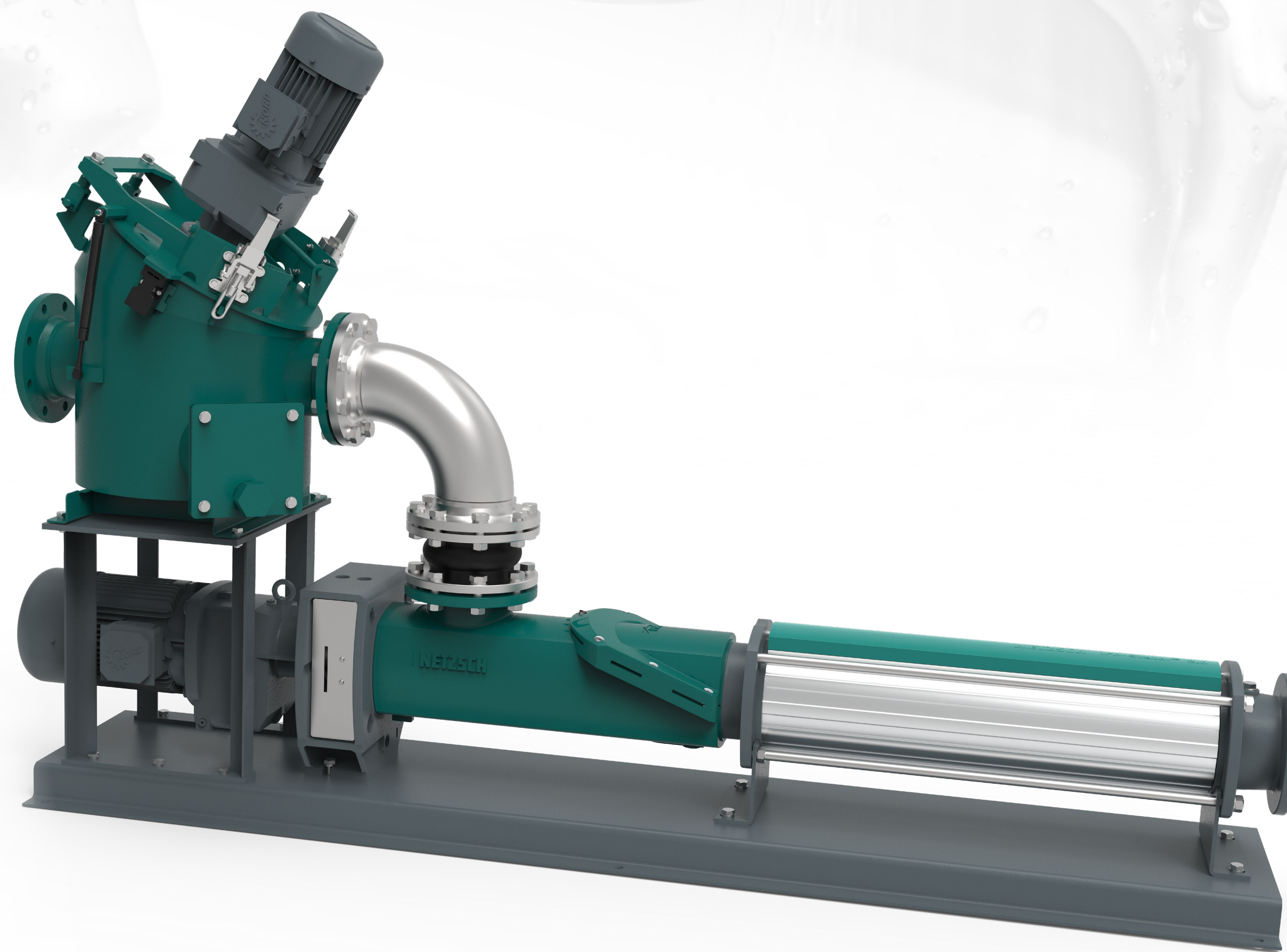
The medium with solid or fibrous parts is continuously sucked into the M-Ovas[®] by a self-priming NEMO[®] progressing cavity pump or TORNADO[®] rotary lobe pump arranged behind the macerator. The solids are crushed or remain in the stone trap below the cutting unit. This protects all downstream units.

Functionality

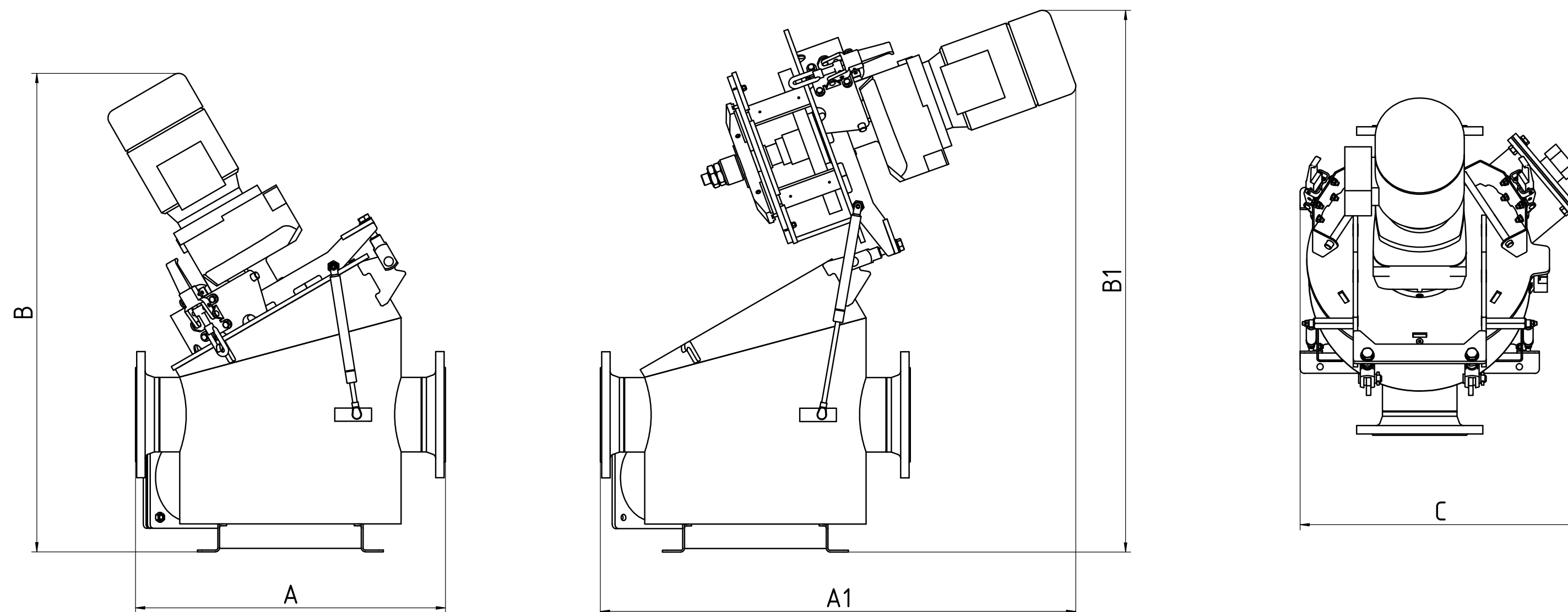
With the cutting plate macerator the crushable parts are either pressed to the cutting plate or partially drawn into the holes of the cutting plate by the flow. Larger particles jam in front of the cutting plate and are crushed by the cutting head until they can be flushed through the openings of the cutting plate.

Wear resistance

The cutting plate consists of a wear-resistant special alloy, is hardened and finely polished on the contact surface to the cutter head. The cutter head is made of steel with positively shaped carbide cutting edges. In case of wear the cutting plate can be turned.



M-Ovas[®] cutting plate macerator connected to a NEMO[®] pump inlet with the flange set at 90°.



Flow rates und dimensions

Sizes	Flow rate (m³/h)	Pressure drop (bar)	Maximum pressure (bar)	Approximate weight (kg)	Flanges (ANSI/ DIN)	Dimensions (mm)				
						A	A1	B	B1	C
S 2,2/50	50	0,05	1	120	100 PN16	500	790	840	850	400
S 4,0/300	300	0,12	2	195	150 PN16	700	1100	1080	1230	640

N.Mac[®] Inline

N.MAC[®] TWIN SHAFT GRINDER

The double-shaft grinder N.Mac[®] is capable of fragmenting large and solid particles in liquid media. It is the ideal equipment to suit different applications such as wastewater treatment, substrates or food and fruit scraps for biogas plants. The inline housing allows installation in piping systems to protect downstream equipment, such as pumps.

Design

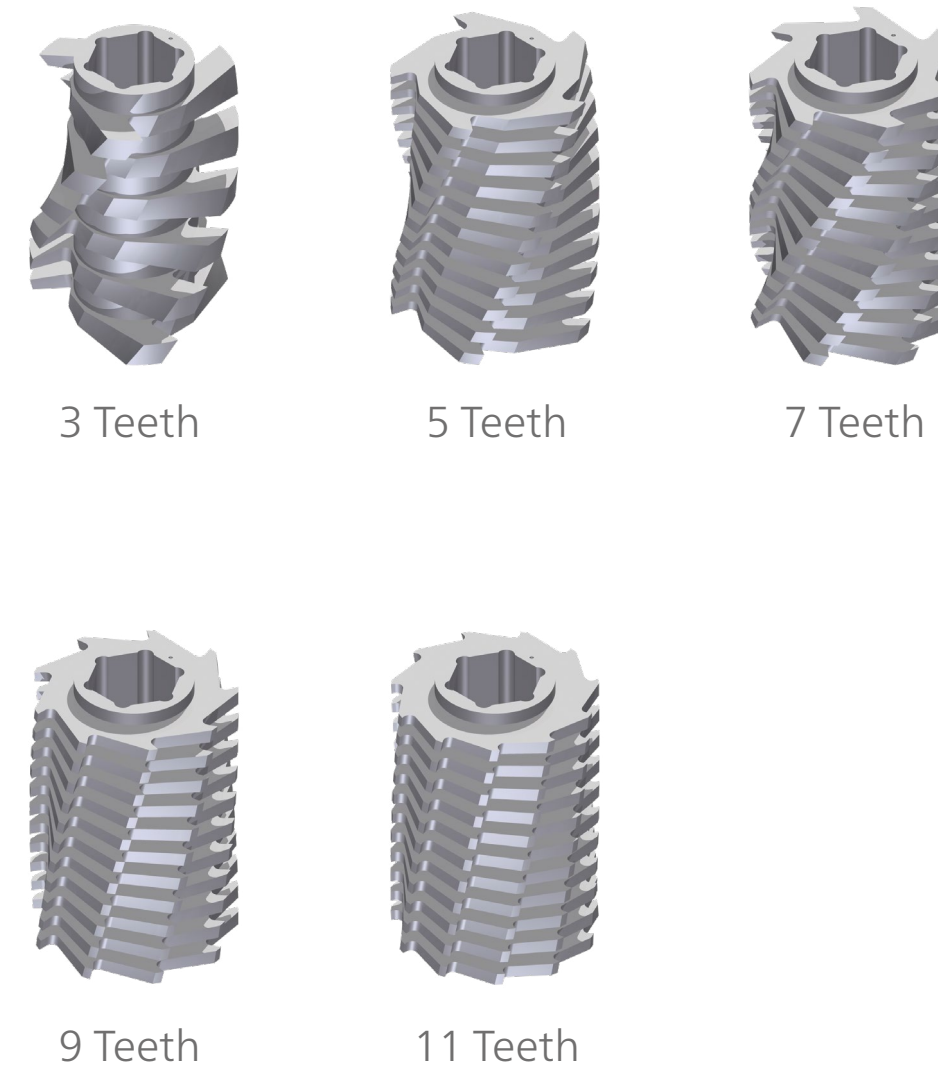
- Housing for installation in pipes and sewers
- Twin-shaft technology for shredding solids
- Low blade speed with high torque (reduction ratio 1:29); both shafts operate at different speeds
- Hexagonal shafts made of hardened steel
- Various blade configurations available
- Optional control with direction of rotation reversal for protection against blockages
- Optional extended shaft for sewer versions
- Optional cleaning combs
- Optional reverse control

Large flow rates

- Throughput rates up to 350 m³/h
- Substrates with a dry residue content of 10-12%

Wide range of applications

- Biogas plants
- Agriculture
- Slaughterhouses and recycling centres
- Sugar factories
- Wastewater and sludge



Advantages

- Shock absorption system
- Mechanical seals with quench
- Optional cleaning comb for fibrous materials
- Cutting devices in cartridge system
- Patented bearing and mechanical seal cartridges

Cutter cartridges

Specific cutter geometries for each type of solids facilitate the particle reduction process. To reach the required particle size the different cutters with 3 to 11 teeth may be combined accordingly.

Technical details

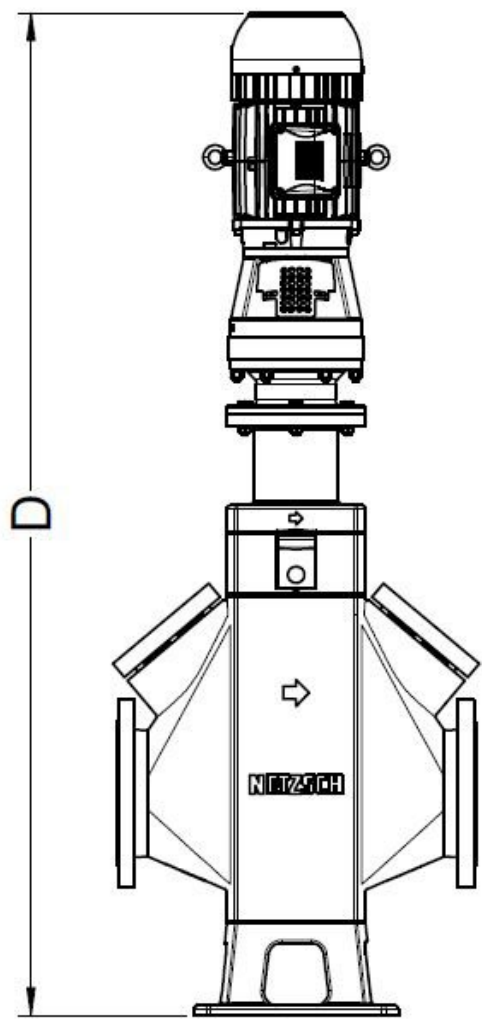
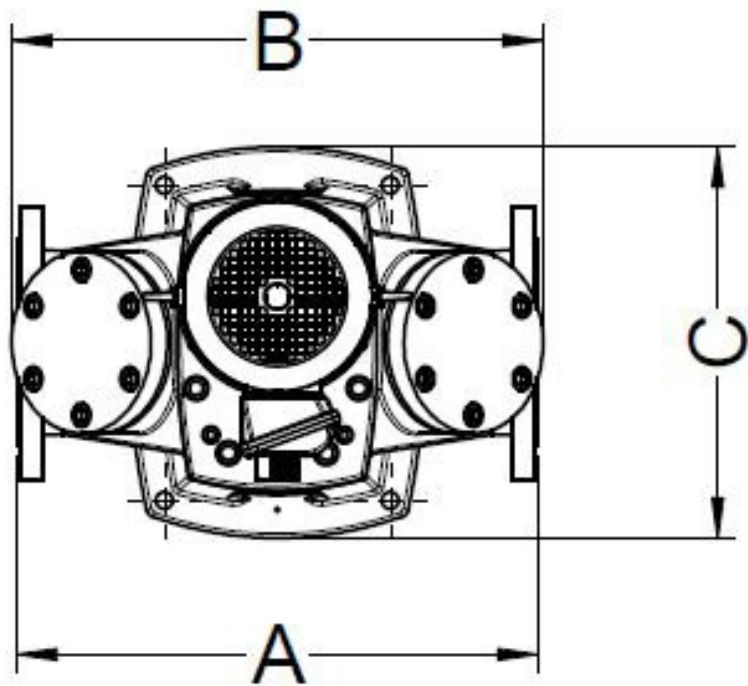
N.Mac® 50I



N.Mac® 150I



N.Mac® 350I



Flow rates und dimensions

Sizes	Flow rate (m³/h)	Pressure drop (bar)	Maximum pressure (bar)	Approximate weight (kg)	Flanges (ANSI/ DIN)	Abmessungen (mm)			
						A	B	C	D
N.Mac® 50I	50	0,05	6,0	220	150	340	350	445	1130
N.Mac® 150I	150	0,12	6,0	360	150	545	555	410	1525
N.Mac® 350I	350	0,08	6,0	780	250	830	830	425	1780

N.Mac® Channel

DOUBLE SHAFT GRINDER FOR CHANNEL INSTALLATION

The N.Mac® channel twin shaft grinder macerates coarse and solid contaminants in liquid media. It is ideal for a wide range of applications from wastewater treatment, substrates for biogas plants to food and fruit residues. It prevents pipes from becoming blocked and protects downstream appliances such as pumps.

Design

- Double shaft technology for size reduction of solid particles
- Energy efficient motors, from 2.2 - 4 kW
- Housing for pipework and sewer installation
- Low blade speed with high torque (reduction ratio 1:29)
- Hexagonal shafts made from hardened steel
- Various blade configurations available
- Optional control with direction of rotation reversal for protection in the event of blockages
- Optional extended shaft for channel versions
- Cleaning combs
- Optionally with reversing control
- Cutter sets similar to N.Mac® Inline

Wear resistance

The cutters are thermally hardened to increase resistance and sharpness assuring reliable grinding of the toughest solids.

Wide range of applications

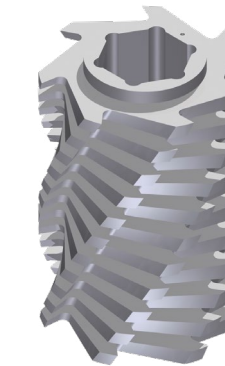
- Wastewater treatment plants
- Slaughterhouses and recycling centres
- Food waste
- Shredding of foreign materials, such as plastic, bags and bottles, as well as shoes, textiles, hides and hair, and aluminium cans



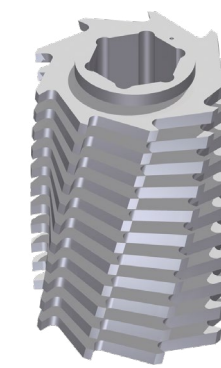
3 Teeth



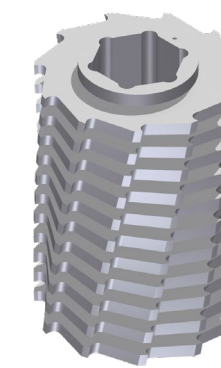
5 Teeth



7 Teeth



9 Teeth



11 Teeth

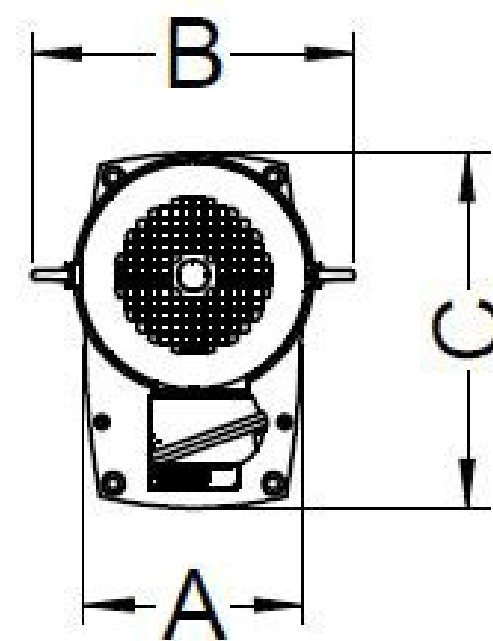
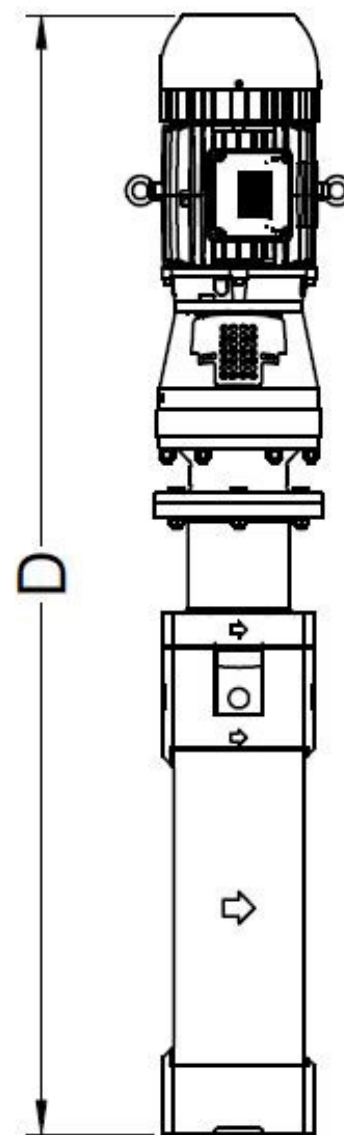
Advantages

- Shock absorption technology
- Mechanical seal with quench
- Optional cleaning comb for fibrous materials
- Patented side rails
- Cutting devices in cartridge system
- Patented bearing and mechanical seal cartridges

Technical details



N.Mac® 50C
N.Mac® 120C
N.Mac® 250C
N.Mac® 400C



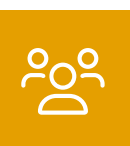
Flow rates und dimensions

Sizes	Flow rate (m3/h)	Approximate weight (kg)	Dimensions (mm)			
			A	B	C	D
N.Mac® 50C	50	170	190	290	310	1225
N.Mac® 120C	120	200	190	290	310	1400
N.Mac® 250C	250	260	190	290	310	1750
N.Mac® 400C	400	320	190	290	310	2095

Service und Support

FOR US, PARTNERSHIP DOES NOT END WITH THE PURCHASE

We know no limits when it comes to offering our customers first rate service. Our promise is to deliver Proven Excellence – outstanding performance in all areas.



Unlimited personal support

Our experienced employees provide support and advice worldwide and around the clock, always tailored to your specific requirements. With our global network of service locations and warehouses, we guarantee prompt and efficient support, including on site and in person, so your pumps can always run smoothly.



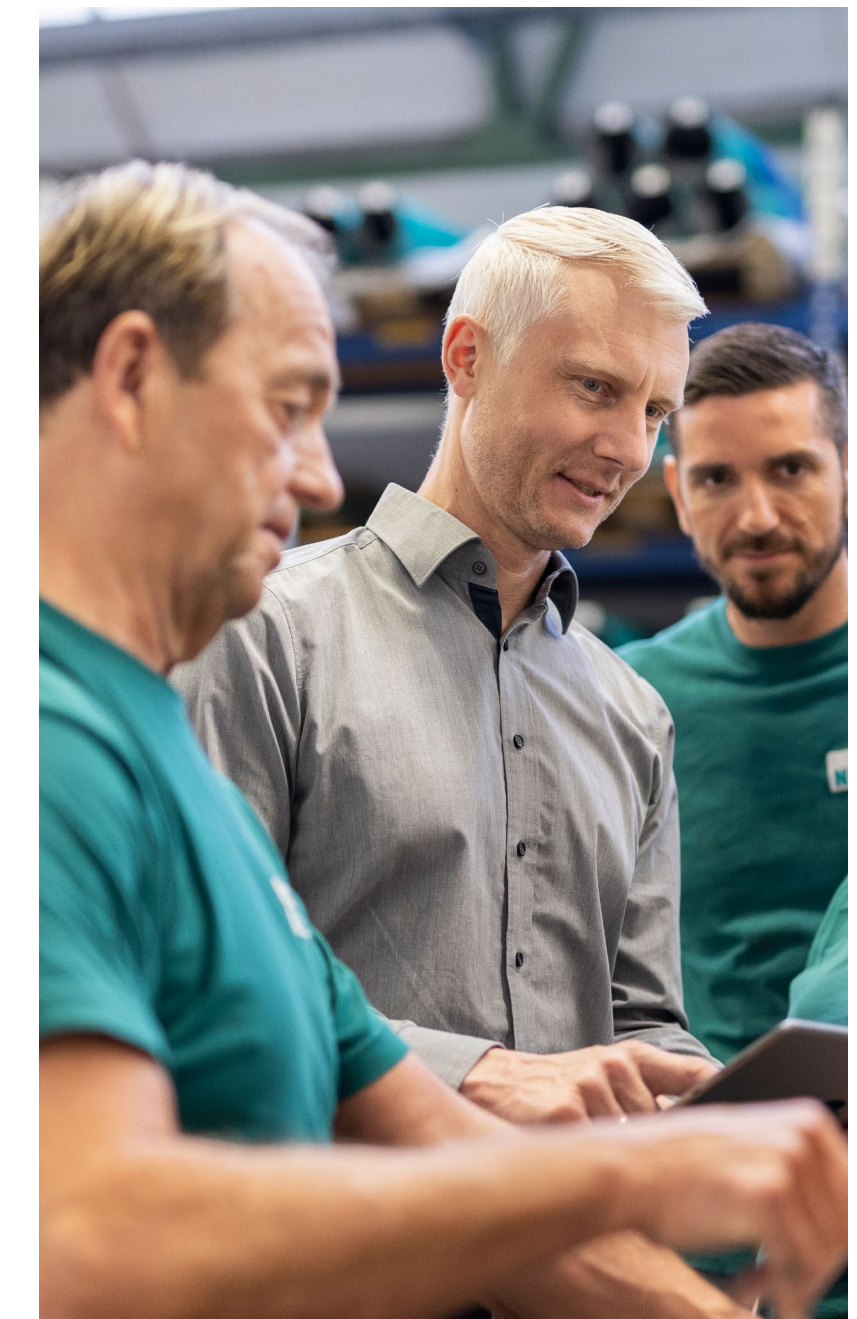
Spare parts

NETZSCH original spare parts stand for the highest manufacturing quality. We ensure reliable quality through worldwide implementation of uniform standards as per DIN EN ISO 9001. This enables reliable operation of your pumps with little downtime and low maintenance costs, and therefore continued optimum performance.



Technical training

The specialists from our Technical Service provide practical training for your employees at the NETZSCH training centres, online or at your facility. This allows you to benefit from cost savings and increased pump efficiency and to avoid mistakes during commissioning, maintenance or repairs.



**More information on
our service and support
can be found here:**

The owner-managed NETZSCH Group is a leading global technology company specializing in mechanical, plant and instrument engineering.

Under the management of Erich NETZSCH B.V. & Co. Holding KG, the company consists of the three business units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems, which are geared towards specific industries and products. A worldwide sales and service network has guaranteed customer proximity and competent service since 1873.

The NETZSCH Business Unit Pumps & Systems offers NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, PERIPRO® peristaltic pumps, macerators/grinders, dosing technology and equipment that are custom built for challenging solutions for different applications globally.

Proven Excellence.■

NETZSCH Pumpen & Systeme GmbH
Geretsrieder Straße 1
84478 Waldkraiburg
Germany
Tel.: +49 8638 63-0
info.nps@netzsch.com
www.pumps-systems.netzsch.com