

Operating Instruction

IMPACT WHIRL MILL DemiNo[®] D 2700

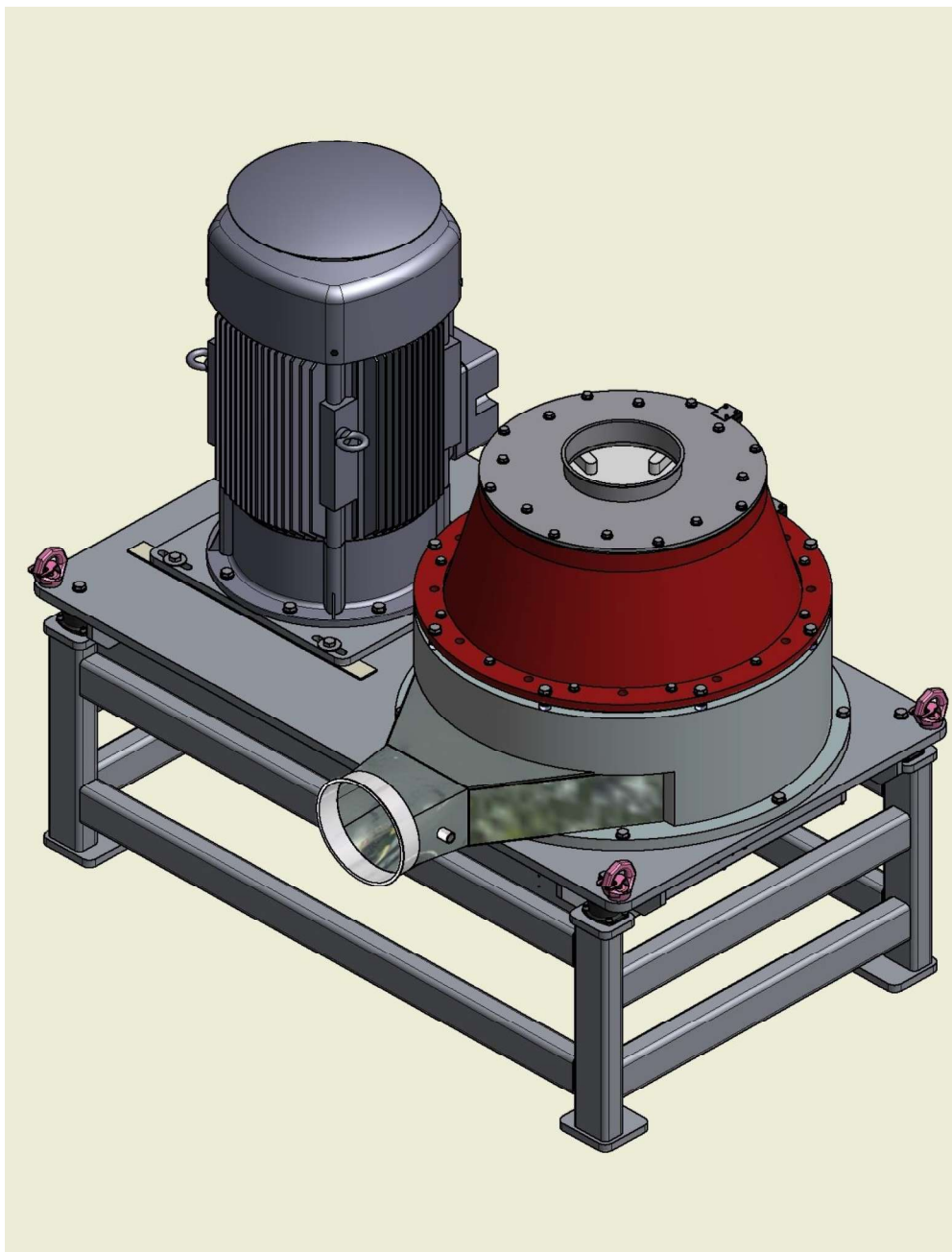


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Technical Data

Product Data:

Product:	Organic waste material cleaned and treated
Feed Size:	< 15 mm
Properties:	Moisture < 2 %
Final size:	< 700 µm
Capacity:	300 - 330 kg/hr depending on feed size and final size

Machine Data:

Machine Type:	Impact Whirl Mill DemiNo® D 2700
Material of Construction:	Stainless steel / Special steel / Mild steel
Surface Coating:	Mild steel parts with Primary and Cover Paint
Internal Parts:	Milling rotor with hard metal tools Grinding track patented type with hard metal tools

Electrics:

Voltage:	400 V, 3 Ph, 50 Hz
Valves:	24 V DC
Mill drive motor:	90 kW, 400 V, 50 Hz

Compressed Air (rinsing air):

Pressure:	approx. 1,5 bar (ov.)
Consumption:	approx. 12 Nm³/h
Conditions:	ambient temperature, clean and oil free

Dimensions and Weight of Machine:

Space Requirement:	max. 1,8 x 1,4 m, height min. 1,8 m + space for operating and maintenance
Total Weight:	approx. 2800 kg

Scope of Delivery

The Impact Whirl Milling Unit DemiNo[®] D 2700
consists of following components:

- Mill housing with bearing unit, rotor and stator
- Mill drive motor
- Base frame
- Pneumatic unit for purge air
- Sensors
- Junction box

Preparation on Site

Preparation for Installation:

The mill is designed to be part of a milling line.

For the installation of the machine there must be foreseen a solid floor with sufficient carrying capacity in accordance with the load data supplied by NOLL.

Compressed Air Supply:

For the operation of the machine there is required an on-site supply of compressed air.

Indication on air amount, pressure and quality of the compressed air can be found in chapter B.04 "Pneumatic Connection"

Electric Power Supply:

The data for the power supply and connection can be found in chapter B.03 "Electrical Connection"

Accident Prevention

With the design of the machine the relevant safety regulations of the European Community where observed.

The mill housing is divided in two parts. Those part are connected with bolts. A suitable tool is needed to loosen the bolts and to lift the top section.



Attention!

The rotor runs slowly down after switching off the machine. Due to its high speed it lasts a certain time until standstill. The machine must not be opened before the complete standstill of the rotor. The standstill can be visually observed at the cooling fan of the motor and the speed indication.

The safety equipment installed at the machine is further described in chapter D.02 "Safety Equipment"

All safety relevant parts may not be detached or modified.
All safety equipment must be in exquisite technical condition at any time.

The instructions and the advice in this manual must be always observed.
This also concerns the instructions for added parts from other suppliers that are to find in chapter K.

Dust development at operation and maintenance must be avoided to prevent the health of the personnel working at the machine.
The threshold limits valid for the dust concentration of relevant processed products may never be exceeded.

Maintenance work and electrical works shall only be executed by educated specialists.
Before the beginning of maintenance works it must be ensured that the machine is completely switched off and that the power supply is interrupted.
Measures must be taken to prevent the unintended start of the machine in form of a lockable main switch or locally placed lockable switches.

Furthermore, all relevant safety regulations issued by the government or other authorities that are valid in the area where the machine is installed, must be observed and followed.

Intended Use

The fine impact whirl mill is basically constructed for the milling of non-explosive, not combustible and chemical not aggressive materials.

Explosive products can only be processed, if further explosion protection measures are foreseen (such as explosion vent) in the system where the mill is included.

The design and execution of the impact whirl mill is made for the fine grinding of waste plastic material or similar slightly abrasive products.

When operating the impact whirl mill within the intended use, danger can occur, that shall be prevented by following the warnings in this manual.

When the instructions for preparation, operation and maintenance are strictly followed by the operator and the operational staff, accidents can be prevented and a far going trouble free use of the machine will be ensured.

Warning:

The mill shall only be used when it is in excellent technical condition.

At any trouble with the power supply, the compressed air supply or if any damage at the mechanical or electrical equipment is noticed, the impact whirl mill must be shut down and secured against unintended re-start.

There has to be paid attention to the indications for the intended use and the information about the operation conditions for added parts, which are given in the manuals for added parts of other suppliers.

Important:

The impact whirl mill DemiNo D 2700, supplied by the company Noll, is in accordance with the regulations of the European Community

EC Directive on Machines 2006/42/EC

considered as an uncompleted machine. It has to be completed by additional equipment and an electrical control system to a complete machine.

The responsibility lies at the operator of the machine to bring the machine into the state of a complete machine in accordance with the national and - if relevant - additional local regulations. The machine may only be taken into regular operation when the acceptance by the respective authorities is given.

Not Intended Use:

The mill may not be used for any purpose that is not described as intended use. It shall not be used for products or a kind of operation that is not in accordance with the designed conception of the machine.

Machine Description

The Impact Whirl Mill consists of a base frame, carrying the machine housing and the drive motor.

The machine housing itself is divided in two parts:

- the bottom section, incorporating the bearing unit that carries the rotor
- the top section incorporating the grinding track as stator

The rotor is a body, assembled with impact elements.

The gap between rotor and stator is adjustable with distance rings (spacers) between bottom and top section.

By means of a frequency inverter the rotor speed can be steplessly adjusted to determine the fineness of the milled product.

Machine configuration and materials:

Mill housing	mild steel
Grinding track	casted special steel, machined and fully hardened
Milling rotor	casted special steel
Impact elements	hard metal
Base frame (table)	mild steel

Mill Drive, Speed and Sense of Rotation

The mill has a belt drive. Motor and bearing unit are equipped with pulleys.

Motor data:

Voltage	400 V
Frequency	50 Hz
Power	90 kW
Nominal speed	2.975 1/min

The speed of the motor is regulated by a frequency inverter.
It can be adjusted at the operating terminal.

Pulleys and belts:

Motor side pulley:	dia. 250 SPB x8
Rotor side pulley:	dia. 224 SPB x8
Belts:	8x SPB length 2500 mm make OPTIBELT

Speed range of the rotor: 500 to 3300 rpm
at 8,5 to 50 Hz
The output frequency has to be limited to 50 Hz at then frequency inverter.

Sense of rotation: The rotor can run in both directions.
By altering the sense of rotation the impact elements can be used on both sides.
So the standing time of impact elements (rotor and stator) can be extended.

Electrical Connection

The electrical connection of the machine is to be made on site by an educated and authorised electrician.

The electrical material for the connection of the mill motor and other electrical accessories must be in accordance with the regulations VDE 0113a, VDE 0100 or the standards and regulations that have to be applied at the place of installation.

For the electrical power data see the chapter
„Technical Data“ M - A.01 and „Drive, Speed and Sense of Rotation“ M - B.02

For the size of supply cables and their connection see the electrical plan of the electrical control system and the motor type plate.

Pneumatic Connection

Service air:

The machine needs compressed air for the purge air of a sealing labyrinth at the bearing unit.

The compressed air generation and supply to the machine is to be made on site by customer.

The compressed air must be dry and oil free generated by a suitable compressor and a condensation or adsorption drier.

The supply pressure of the service air shall be 5 - 6 bar (ov.)

The armatures for switching and adjusting the pressure of the purge air is in the scope of a pneumatic panel, optionally delivered with the machine.

Connection size: Ø 12 mm
quick connection for hose size dia. 12 mm

Operating pressure of the seal air is 1,5 to 2,5 bar (ov.),adjusted by a pressure regulator

Lubrication grease:

The bearing unit is a grease lubricated type.

Specification of the electrical equipment

Mill Motor:

Description:	Three phase asynchrone motor
Type:	IEC motor with IEC certification
Construction form:	V1 with protection roof
Frame size:	280 M
Performance:	90 kW
Nominal speed:	2.975 1/min
Voltage:	400 V
Frequency:	50 Hz
Nominal current:	152 A
Protection class:	IP 55, Iso-Cl. F -155
PTC sensor:	yes
Manufacturer:	Siemens

Speed Sensor:

Description:	Inductive sensor
Type:	NCN4-12GM40-E2-V1-3G-3D
Manufacturer:	Pepperl+Fuchs

Safety Switch System:

Description:	Non contact safety system with two coded activator, read head and one evaluation unit
Type:	Actuator CES-A-BBA Read head CES-A-LNA-SC Evaluation unit CES-AZ-AES-02B
Manufacturer:	Euchner

Functional Description Milling

The feed product must be well rated given to the mill inlet.
The feed rating will be made either with a dosing screw or a vibration feeder.
When entering the mill, the feed product will be distributed by impact elements on the top side of the rotor and forced into the gap between rotor and stator.

The product particles are reduced in size while passing through the gap.
There are impact, shearing and friction forces that work on the particles to make them smaller in size.

With an air flow the milled product is transported out of the milling zone and leaves the mill into a dust collector.

Characteristic for this type of mill are high speed whirls that give additional friction to the particles and determine the retention time in the milling zone.

The fineness or quality of the milled product is determined by following parameters:

- Speed of the rotor
- Gap size between rotor and stator
- Rotor type or configuration
- Product throughput
- Air flow rate

The illustration on the next page shows the function principle of the **DemiNo[®] - Impact Whirl Mill**.

Function Principle Milling

