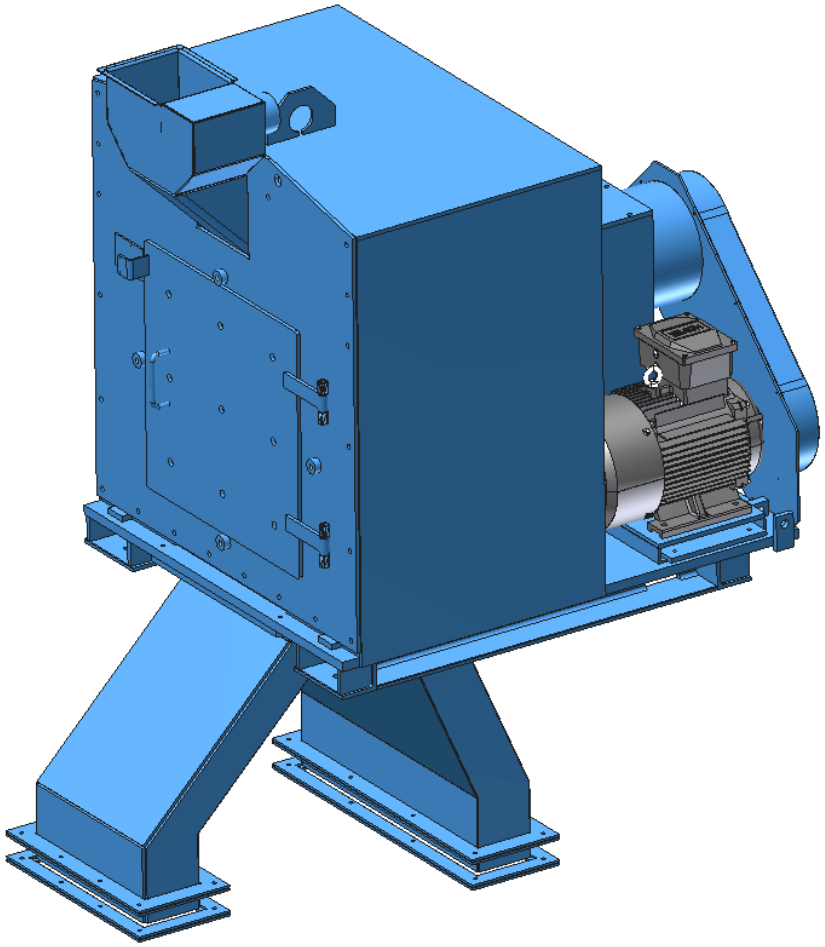
Nederman

Instruction manual

Chip & swarf management system

Horizontal centrifuge

HD82



Original instruction manual

EN INSTRUCTION MANUAL

Translation of original instruction manual

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Figures

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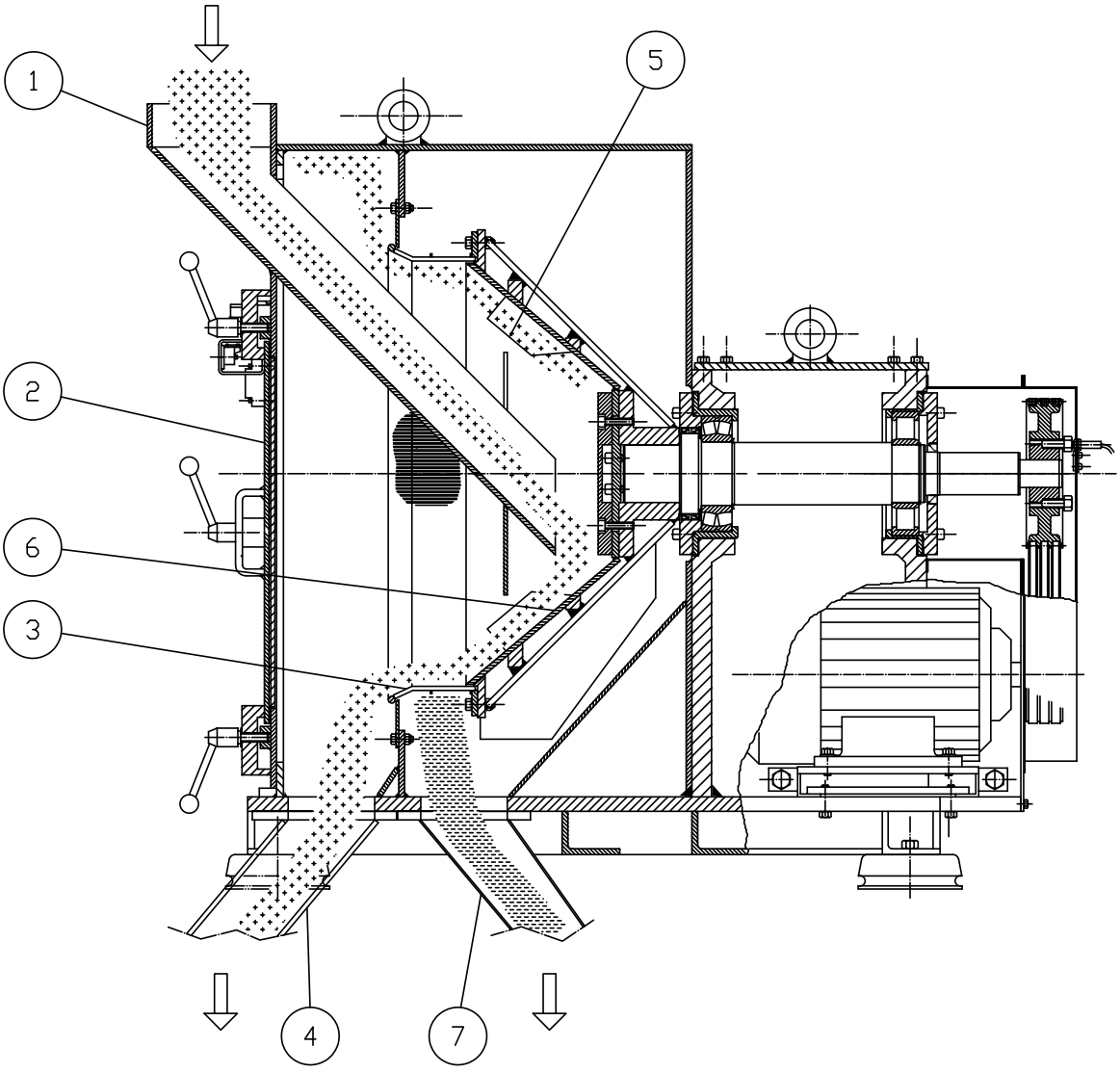

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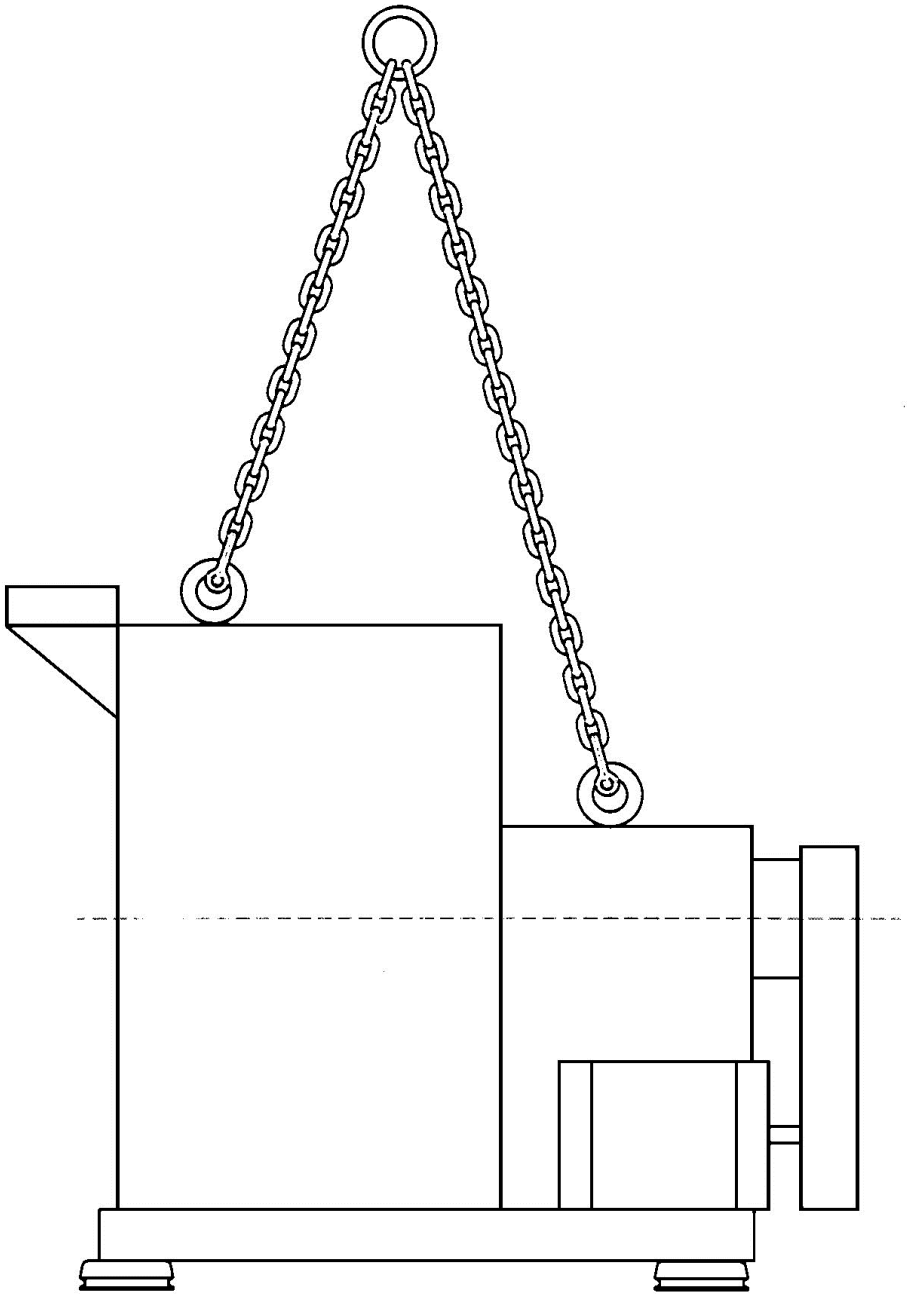

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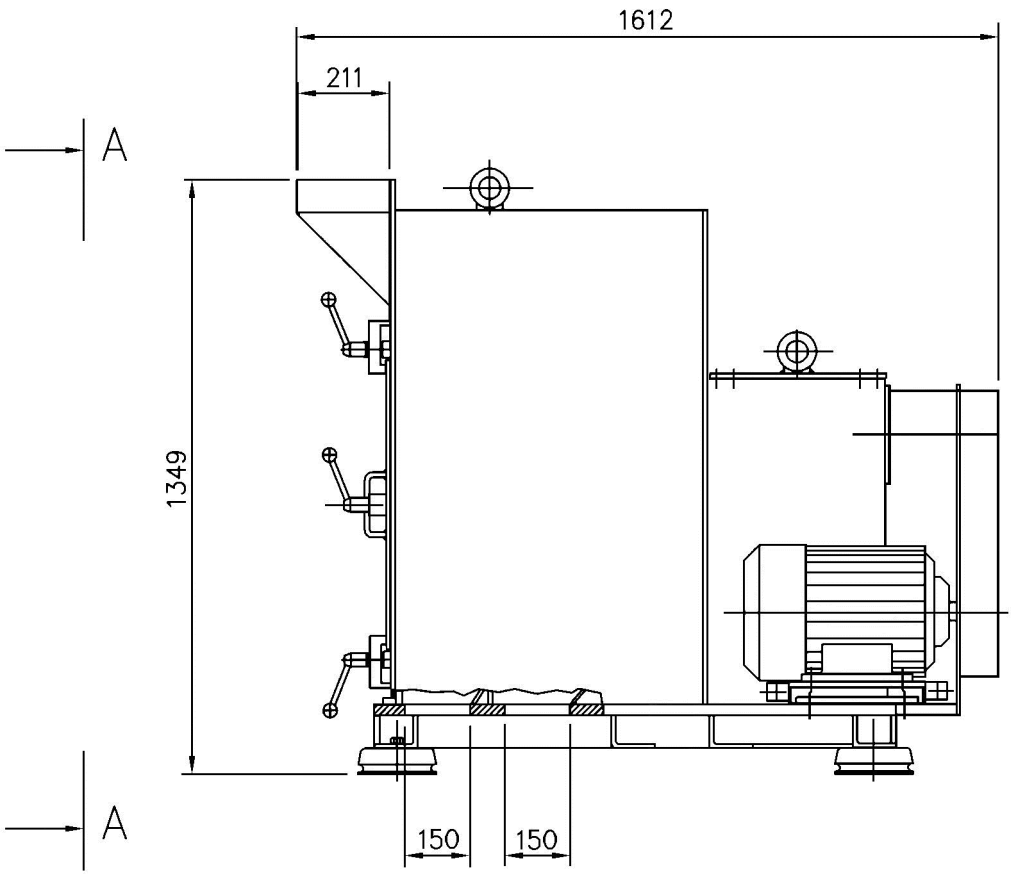

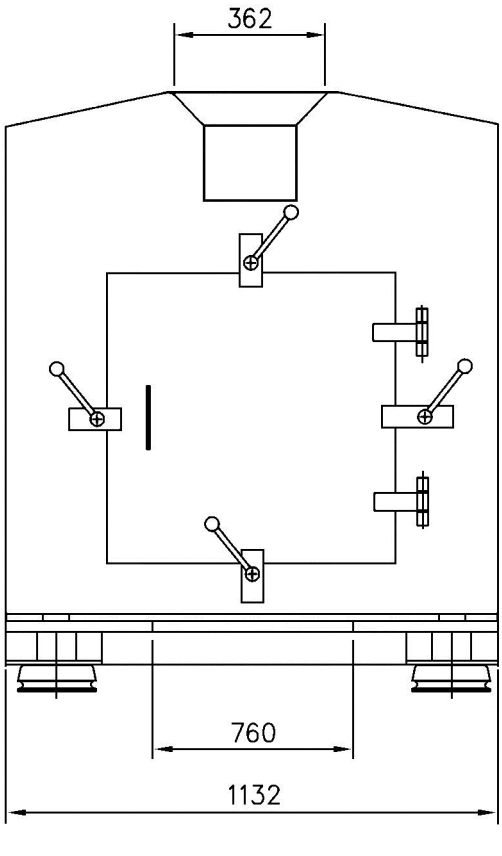

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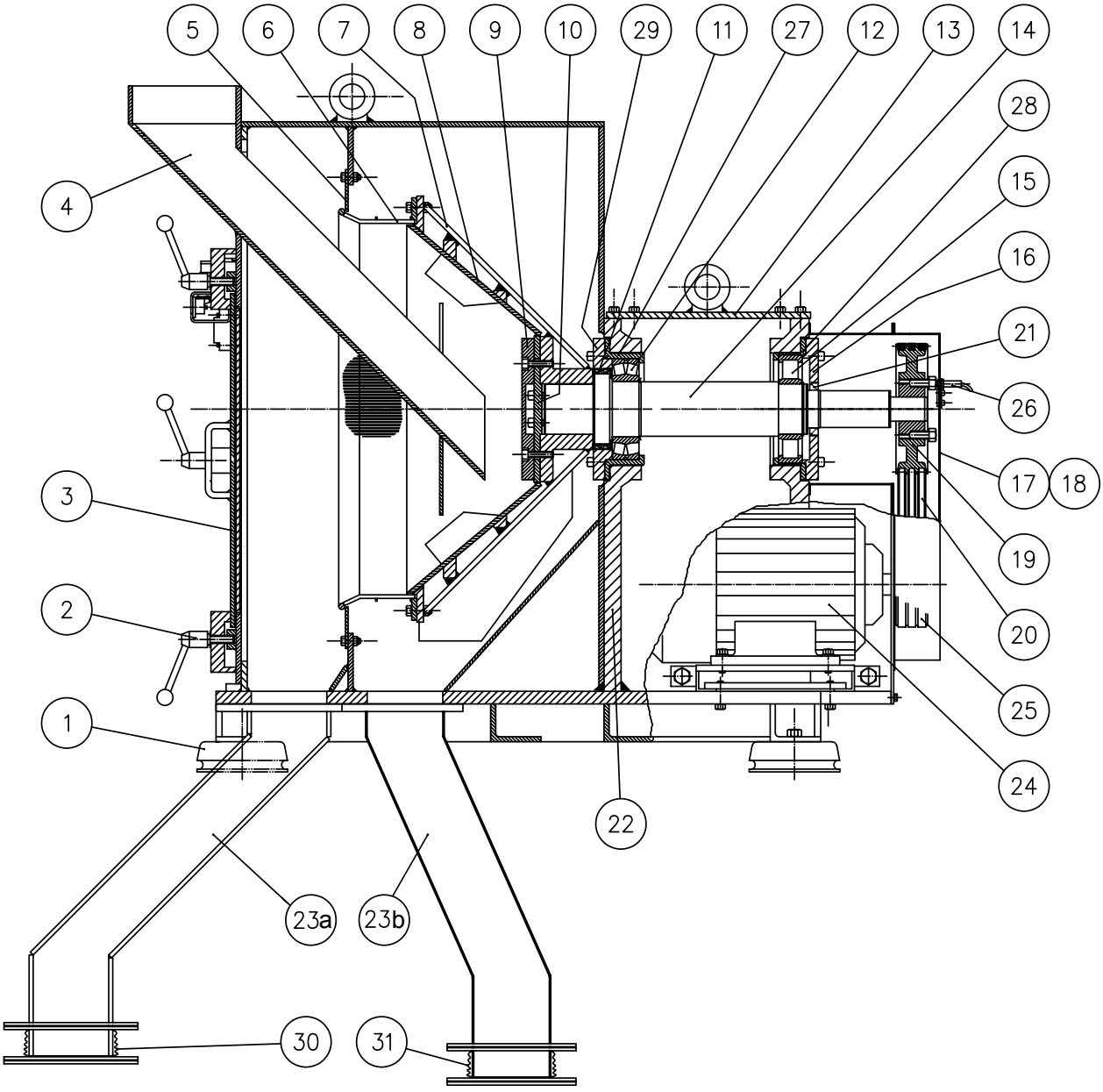
5
6
7
8
9
10
29
11
27
12
13
14
28
15
16
21
26
17
18
19
20
25
24
4
3
2
1
22
23a
23b
30
31

English

Instruction manual

Chip and swarf management system

Horizontal centrifuge

HD82

Table of contents

1 Declaration of conformity

The formal Declaration is attached to your product.

2 Preface

This manual is for the correct installation, use and maintenance of this product. Read it carefully before using this product or carrying out maintenance. Replace the manual immediately if lost.

This product has been designed to meet the requirements of relevant EC directives. To maintain this status, all installation, repair and maintenance work for this product is to be carried out by qualified personnel using only original spare parts. Contact the nearest authorized distributor or Nederman for advice on technical service and obtaining spare parts.

NOTE! Read Chapter '4 Safety' thoroughly.

Nederman continuously improves its products' design and efficiency through modifications, and reserves the right to do so without introducing these improvements to previously supplied products. Nederman also reserve the right to, without previous notice, modify data and equipment as well as operating and maintenance instructions.

2.1 Foreword

NEDERMAN Swarf Centrifuges guarantee good design, quality components and skilled labour plus years of experience in swarf handling and swarf crushing. All these abilities have been used to design a product with high reliability and long service life. We are convinced that your experiences will confirm your choice of NEDERMAN Swarf Centrifuge.

Length of life and reliability can, as with any machine tool, be prolonged with correct installation and correct maintenance. It pays off to follow our advice for maintenance.

This maintenance manual consists of instructions for your new NEDERMAN Swarf Centrifuge. It also contains greasing instructions, spare parts list with exploded view and a simple schedule for trouble-shooting.

NEDERMAN Swarf Centrifuges are normally used in swarf handling systems which we design, sell and install.

All Swarf Centrifuges which leave our works are checked and do not need any additional maintenance other than stated in this manual.

For orders of spare parts and if you wish to contact our engineers please find our phone number and address at the back cover page of this instruction.

Your HD82 Swarf Centrifuge has been produced by:

NEDERMAN Manufacturing Poland Sp. z o. o.

ul. Okólna 45 A

05-270 Marki, Poland

Tel: +48 22 7616000

Fax: +48 22 7616099

www.nederman.com

2.2 Guarantee

All products from NEDERMAN are guaranteed free from any fault in material and labour usually during a period of one year. One year consists of 365 calendar days or 1800 hours which ever occurs first. The guarantee period for our products starts the day the equipment is sent to the client and continues during one year as earlier described. This is due if our maintenance and control recommendations are followed.

The guarantee is not valid for incorrect erection, misuse, incorrect maintenance or if maintenance is not made due to our recommendations and accepted industry practice.

During the guarantee period and after written notice to us, we guarantee that all parts manufactured in our plant which are faulty regarding material or labour shall be replaced. We give no further guarantee either written or verbal for costs except material and man labour.

This guarantee or other guarantees from us do not cover:

1. Damage after the guarantee period is ended.
2. Damage caused by chemical reactions or wear due to the detail has been submitted to external influences.
3. Equipment damaged at delivery or by accidents.
4. Damage through misuse, incorrect use or feeding of the centrifuge or if recommended maintenance is not followed.
5. Damage to equipment which have been repaired or changed by others than by the one who has been acknowledged as our sole representative.
6. Wearing parts.

The capacity depends on volume/weight of material, size and shape of the chips. The capacity and residual humidity data specified in our order confirmation are valid for your centrifuge.

3 Notices

This document contains important information that is presented either as a warning, caution or note. See the following examples:

WARNING! Type of injury.
Warnings indicate a potential hazard to the health and safety of personnel, and how that hazard may be avoided.

CAUTION! Type of risk.
Cautions indicate a potential hazard to the product but not to personnel, and how that hazard may be avoided.

NOTE! Notes contain other information that is important for personnel.

4 Safety

This chapter contains important information that refer to a potential hazard to the health and safety of personnel, and how that hazard may be avoided.

- Electrical installations have to be done by qualified personnel only.
- At connection of voltage feed as well as at service and maintenance work on the centrifuge the circuit breaker must be off.
- Test the emergency stop at installation and always when maintenance and service have been done.
- The centrifuge must not be operated with the covers removed.
- Materials able to centrifuge are different qualities of steel swarf as well as brass and cast iron swarf, if any other material please ask Nederman.
- The data sheet from the coolant supplier must be studied as parts from coolant can cause allergic reactions.

WARNING!
The floor around the centrifuge might get slippery from coolant getting outside the machine.

5 Description

5.1 Function

The NEDERMAN horizontal centrifuge is a drum centrifuge, which via rotation movement exposes the supplied material to high G-forces. The solid particles are separated on the inner periphery of a screen, whilst the liquid passes through this.

Figure 1 shows the material flow through the centrifuge.

The material fed in through the top inlet hopper (**1**), glides down and is fed directly to the drum walls (**6**). On contact with the drum walls the material is accelerated to the speed of the drum at the periphery. During this acceleration phase the material moves outwards along the drum until it comes into contact with the wedge bar screen (**3**) or remaining layer of previously accelerated material. By building up an additional layer of material over the previous layer the old material is forced to glide over the screen and out from the centrifuge via the outlet for dry chips (**4**). During the time the material is exposed to the centrifugal force the liquid is separated from the solid particles. When the material passes over the screen the liquid goes through this and out from the centrifuge via the outlet for liquids (**7**). This outlet is located immediately behind the outlet for dry chips.

A conveyor should be connected to remove the solid particles. The liquid should be drained to a sedimentation tank, which in turn should be equipped with a drag conveyor.

Your NEDERMAN Swarf Centrifuge is designed to operate at high rpm and is almost completely vibrationless. Each component in the rotating system is individually balanced so that all parts are fully replaceable without disturbing overall balance.

Despite the fact that the parts are individually balanced a certain imbalance may arise when material is fed in. To avoid vibrations being transferred to mountings the centrifuge is installed on vibration absorbers.

The screen opening is delivered as a standard 0.7 mm if not otherwise specified in the order. Other screen openings may be fitted.

5.2 Technical data

Table 5-1: Technical data

Model	Capacity* (kg/h)	Motor	Weight (kg)	Noise level dB(A)***	Space requirements (mm)	Part No.
HD82	2000	11 kW - 3ph	1400	78,5	1100 x 1900	76362841**

For main dimensions of the unit see Figure 3.

* Capacity depends on volume / weight of material, size and shape of the swarf

**Including:

- unit stand
- shaft rotation inductive sensor (w/o controls)
- wearing parts made of SS / Hardox
- motor supply 3~400V 50Hz

*** Measurement based on EN ISO 11201.

6 Main components

We continuously improve our products and their efficiency through the introduction of design modifications. We reserve the right to do this without introducing these improvements on previously supplied products. We also reserve the right, without previous notice, to modify data and equipment, as well as operating and maintenance instructions.

Table 6-1: Unit main components are shown on Figure 1.

Pos.	Name
1	Wet chip inlet hopper
2	Access door
3	Self-cleaning wedge bar screen
4	Dry chip discharge outlet
5	Accelerator vanes
6	Separator drum
7	Liquid discharge outlet

6.1 Accessories

The screen opening is delivered as a standard 0.7 mm if not otherwise specified in the order. Other screen openings may be fitted.

The accessories for HD82:

- Support stand.
- Inductive sensor for shaft monitoring (without control).
- Wear Parts Stainless Steel / Hardox.

7 Before installation

7.1 Delivery checks

Check the unit for any transport damage. In case of damage or parts missing, notify the carrier and your local Nederman representative immediately.

7.2 Installation requirements

Lifting instructions

Lift the centrifuge by crane. Use a 2-part chain of approved quality and strength and in adapted lengths. Place the chain in the eye bolts on the upper side of the centrifuge. See Figure 2.

Weight 1400 kg.

8 Installation

8.1 Installing the Swarf Centrifuge

Consideration must be taken to the positioning of the centrifuge in relation to other equipment. The centrifuge requires very little space. However, space for maintenance must be available and adequate space must be ensured for access to all the hatches. There must be space in front of the centrifuge for the replacement of screen, drum and the interior components.

Lifting fixtures should be available in view of the fact that several of the parts which need to be replaced weigh over 125 kg.

NEDERMAN Swarf Centrifuge is delivered fully fitted. Observe care during installation and always use the lifting hooks which it is equipped with. The mountings should be level and sufficiently secure to support a load of about 1700 kg (incl. frame and outlet chutes) and also be available to sustain dynamic loads via the centrifuge´s vibration absorber. The dynamic loading is normally very low.

There should be no rigid connections to the centrifuge. When the centrifuge is correctly installed it should be able to vibrate on the vibration absorbers without striking or causing any abrasion against any connection. Liquid and solid particles should be fed to a tank or conveyor. A fixed pipe connection should be avoided. The liquid outlet, however, must be shielded to prevent splash.

The motor is dimensioned as 11 kW, 3-phase, 400 V, 50 Hz.

The electric cables to the motor must accommodate a certain flexibility.

9 Using Swarf Centrifuge

9.1 Before start-up

NOTE! The centrifuge is designed for approximately 1-5cm long chips. Before feeding the centrifuge solid parts should be separated to reduce wear and sound level.

Study figure 1 on page 6 - Material flow in centrifuge - where a general description is provided.

Check the following points prior to putting into operation:

1. Free rotation:
   The drum should be able to be turned round by hand.
2. Motor loading:
   Check power consumption while idle running and compare with power during loading and rating data of motor.
3. Observation of idle running sound:
   Attention should be paid to the normal sound level of the equipment.

   NOTE! A screaming noise may be emitted by the V-belt when the drum is accelerating. This is normal.
4. Always start the centrifuge unloaded:
   If the centrifuge is started when loaded then start load will exceed motor capacity. The centrifuge must not be fed until the correct speed of the drum has arisen.
5. Feed the centrifuge evenly:
   Since the centrifuge works continuously it is of great importance that it is fed evenly to ensure a level of residual moisture in the centrifuged chips as low as possible. The feeding of the centrifuge should be done in intervals by a conveyor. As default setting on the feeding conveyor 4s stop time is used followed by 2s run time. This value can vary depending on the shape of the material.
6. Supplementary adjustment:
   NEDERMAN Swarf Centrifuge is on delivery adjusted to cope with the majority of chip types unless otherwise specified. If a chip type should be run subsequently to installation which was unknown to us on the occasion of installation then a supplementary adjustment may be made.

9.2 Operation

The operator should always be aware of the normal power consumption of the motor, normal outflow of solid particles, the liquid content of the material and the level of vibration. By considering the above mentioned factors and observing modifications one can be sure that the centrifuge will function properly.

NOTE! The centrifuge is designed for about 1-5 cm long chips. The solid components should be removed before loading the centrifuge, to reduce wear and noise.

10 Maintenance

Read Chapter ‘4 Safety’ before carrying out maintenance.

Installation, repair and maintenance work is to be carried out by qualified personnel using only original Nederman spare parts. Contact your nearest authorized distributor or Nederman for advice on technical service.

NOTE! The service intervals in this chapter are based on the unit being professionally maintained.

NEDERMAN Swarf Centrifuge is very robust in design but should like every other production machine be regularly checked and maintained. Daily checks should be made at the start of operations until a permanent maintenance schedule can be established. When this has been done only routine checks and general observations are necessary.

All parts coming into contact with the material which passes through the centrifuge are subject to wear. Negligent or delayed replacement of worn parts results in high repair costs and unsatisfactory separating of liquid.
A maintenance schedule should therefore be established which also indicates when it is time to replace worn parts. This schedule may only be drawn up by you since wear is highly dependent upon the ingoing chip quality. A basic rule, however, is to check the screen, drum and housing once a month in the case of 1-shift operations. Inspection takes place via the front door.

10.1 Lubrication

The Swarf Centrifuge has an automatic lubricator for the two roll bearings. The lubricator is on delivery filled with oil, Shell OMALA 68 or equivalent.

Check the oil level in the container regularly (once a month) and fill additionally. Changing of oil must be done every six months during 1-shift operation.

A grease nipple is situated between the packing rings at the housing.

On delivery LOCTITE 8102 grease or equivalent has been used.

The greasing intervals should be adjusted to the operating intensity, there must always be grease between the packing rings.

10.2 Spare parts

Contact your nearest authorized distributor or Nederman for advice on technical service or if you require help with spare parts. See also:

www.nederman.com

Ordering spare parts

When ordering spare parts always state the following:

- Serial number (see the product identification plate.
- Number and name of the spare part (see Table 10-1).
- Quantity of the parts required.

Table 10-1: Spare parts specification - see Figure 4.

Pos.	Article No.	Description	Qty	Unit
1*	76374723	Vibration absorber	4	Pc
2	76376656	Lock handle	4	Pc
3		Front door	1	Pc
4		Inlet chute	1	Pc
5	76376599	Labyrinth seal	1	Pc
6*	76374724	Screen 0,5mm	1	Pc
6*	76375235	Screen 0,7mm	1	Pc
7	76374729	Basket	1	Pc
8*	76374728	Drum	1	Pc
9	73001324	Sleeve for drum	1	Pc
10	73001325	Shaft plate	1	Pc
11	76376586	Radial seal (front)	1	Pc
12*	76374731	Bearing (front)	1	Pc
13		Door	1	Pc
14	76374732	Shaft	1	Pc
15*	76374733	Bearing (rear)	1	Pc
16	76376612	Bearing cover (rear)	1	Pc
17		Belt protection (inner)	1	Pc
18		Belt protection (outer)	1	Pc
19		V-belt sheave	1	Pc
19		Bushing Ø48 mm	1	Pc
20*	76374725	V-belt	3	Pc
21	76376587	Radial seal (rear)	1	Pc
22		Housing	1	Pc
23a		Outlet chute - chips	1	Pc
23b		Outlet chute - liquid	1	Pc
24	76374734	Motor	1	Pc
25		V-belt sheave	1	Pc
25		Bushing Ø42 mm	1	Pc
26	73000534	Rotation sensor	1	Pc
27	73000243	Bushing bearing (front)	1	Pc
28	73000535	Bushing bearing (rear)	1	Pc
29	76376602	Bearing cover (front)	1	Pc
30	76374726	Rubber - chips outlet	1	Pc
31	76374727	Rubber - liquid outlet	1	Pc
* Wear parts that should be kept in stock				

11 Recycling

The product has been designed for component materials to be recycled. Its different material types must be handled according to relevant local regulations. Contact the distributor or Nederman if uncertainties arise when scrapping the product at the end of its service life.

After dismantling parts should be sorted by:

- electric motors,
- electrical components,
- steel parts,
- plastic parts,
- different materials should be recycled in accordance with current regulations for each variety.

12 Troubleshooting

If the trouble shooting guide in ‘Table 12-1: Trouble shooting guide’ does not solve the problem, contact your nearest authorized distributor or Nederman service center for technical advice.

Table 12-1: Trouble shooting guide.

Problem	Possible cause	Solution
Motor starts but drum stands still.	Belts off or damaged.	Replace belts.
Motor protector fuses or motor sluggish (high power consumption).	Blown fuse.	Check/replace fuse.
	Motor fault.	Replace motor.
	Excess feed.	Check that feed is not higher than indicated in order document.
	Solid particles have piled up in centrifuge housing.	Clean housing and check that free outlet is available for liquid and chips.
Too much chips in liquid outlet.	Worn or deformed screen.	Replace screen.
Too high level of residual moisture in centrifuged chips.	Screen blocked.	Clean screen.
	Screen damaged.	Replace screen.
	Excess feed.	Check that feed is not higher than indicated in order document.
To high level of vibration.	Worn bearings.	Replace bearing.
	Screen damaged by a component and chips has collected at damage location.	Replace screen.
	Worn drum.	Replace drum.

13 Acronyms and abbreviations

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