ARBOGA - DARENTH

OPERATING INSTRUCTIONS FOR

VERTICAL SWARF CENTRIFUGE

TYPE VD40

Customer:.....

Order No.:.....

Manufacturing No:.....

Delivery date:.....

ARBOGA-DARENTH AB

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Foreword

ARBOGA-DARENTH 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 ARBOGA-DARENTH 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 ARBOGA-DARENTH Swarf centrifuge. It also contains greasing instructions, spare parts list and a simple schedule for trouble-shooting.

ARBOGA-DARENTH 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 want to contact our engineers please find our phone number and address at the front page of this instruction.

Guarantee

All products from ARBOGA-DARENTH are guaranteed free from any fault in material and labour 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. Wear 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.

Saftey regulations

- 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 Arboga-Darenth.
- 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.

Operation

The ARBOGA-DARENTH vertical Swarf 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 drum lining, 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 to the bottom of the drum (5). On contact with the drum the material is accelerated to the speed of the drum at the periphery and moves upwards along the drum until it comes into contact with the screen (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 (3). The dry swarf passes over the screen and out via the swarf outlet (2).

Please notice that the Swarf Centrifuge VD40 is available with two options for the swarf. Alternatively the swarf can go straight out at the outlet (2) or an adapter can be fitted, which will cause the swarf to be blown away to a bin.

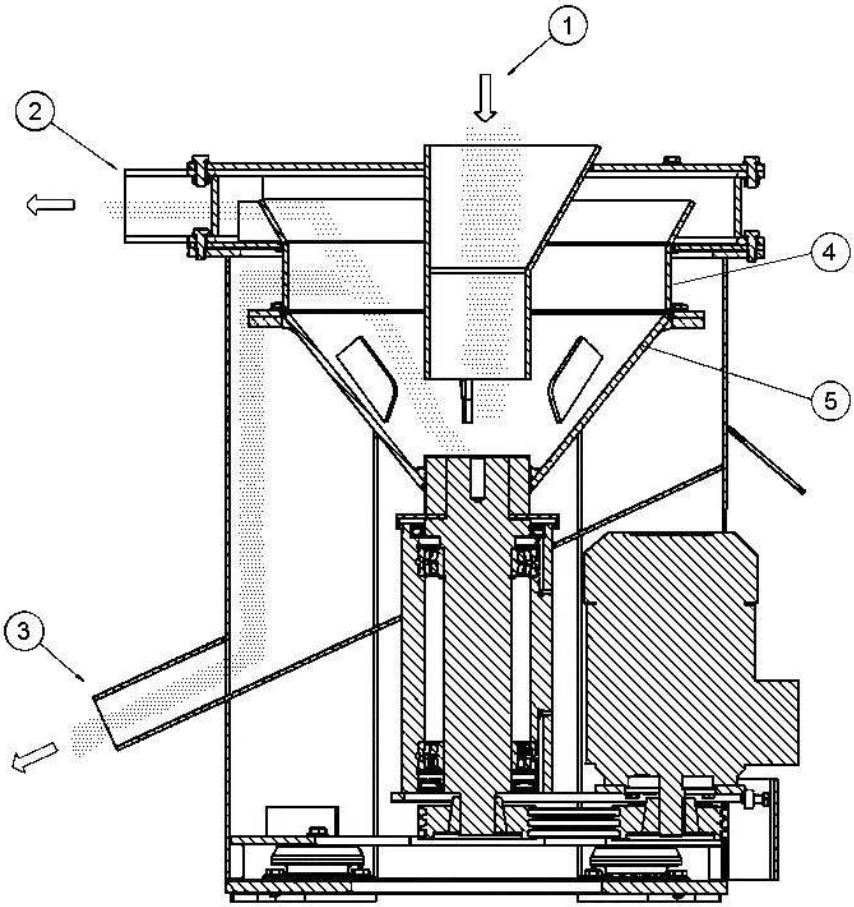
A conveyor should be connected to remove the solid particles. The liquid should be drained to a sedimentation tank, which in turn should be equipped with a drag conveyor.

Your ARBOGA-DARENTH 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 0.5 mm if not otherwise specified in the order. Other screen openings may be fitted.

Material flow in centrifuge



1. Inlet hopper
2. Outlet - swarf/chips
3. Outlet - liquid
4. Screen
5. Drum

Figure 1

Lifting instruktion

The weight of the centrifuge is approx. 450 kg.

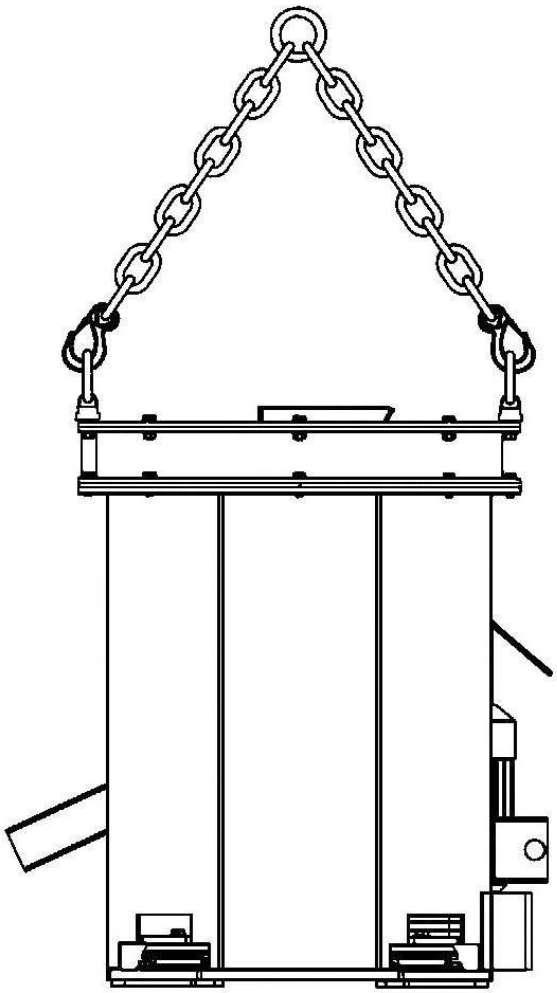


Figure 2

Installation

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.

ARBOGA-DARENTH Swarf Centrifuge is delivered fully fitted. The mountings should be level and sufficiently secure to support a load of about 500 kg and also be availabe to sustain dynamic loads via the centrifuge´s vibration absorber.

The direction of rotation of the centrifuge drum must to clockwise.

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.

A fixed pipe connection should be avoided. The liquid should be fed to a tank and the solid particles to a conveyor. The liquid outlet, however, must be shielded to prevent splash.

The motor is dimensioned as 4 kW, 400 V, 50 Hz and 3-phase.

Installation drawing

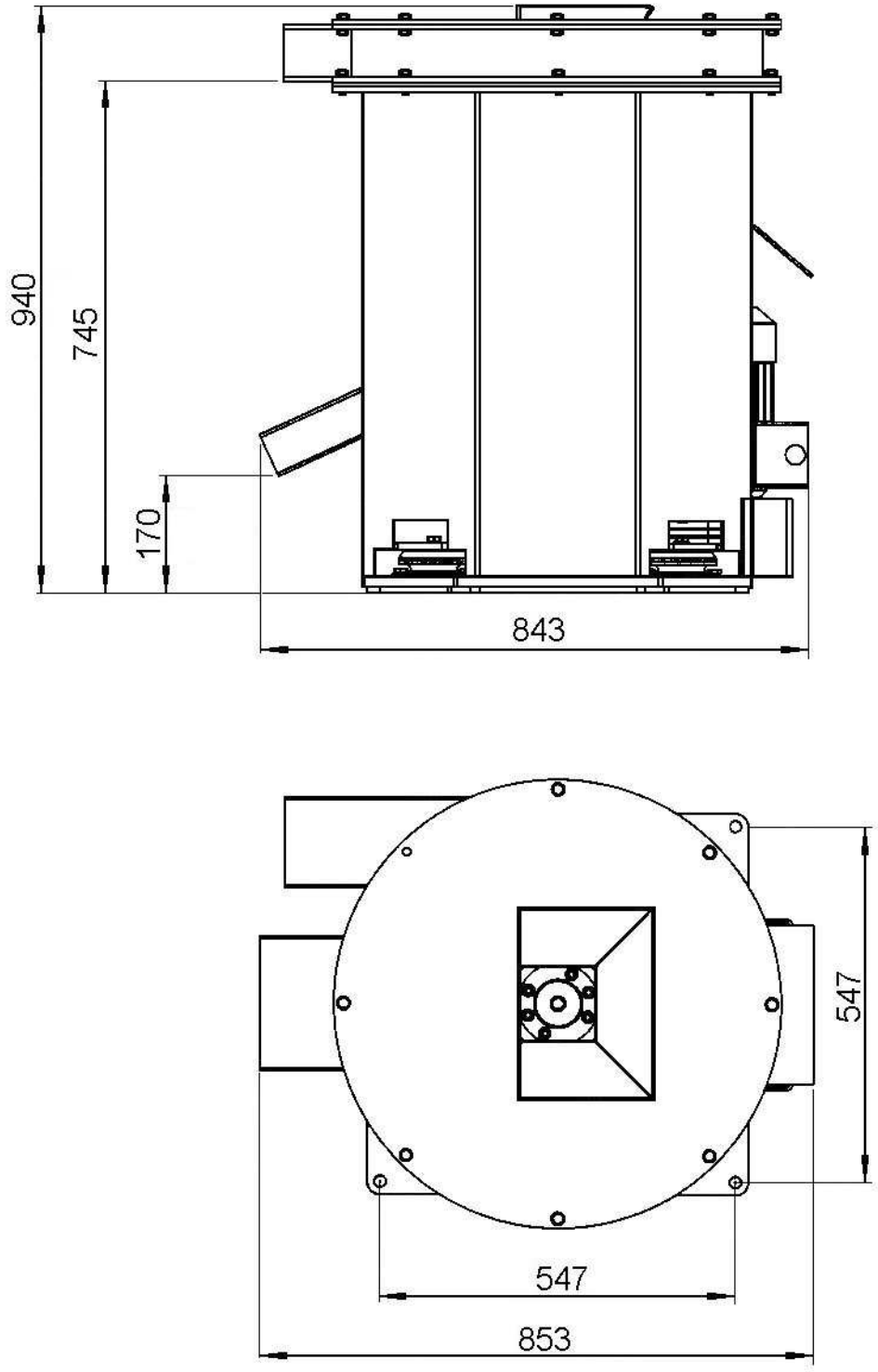


Figure 3

Handling

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. **NOTE!** The direction of rotation of the centrifuge drum must to clockwise.

2. Motor loading
   Check zero-load power and compare with power during loading and rating data of motor.

3. Observation of zero-load 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 machine unloaded
   The centrifuge must not be fed until the correct speed of the drum has arised. If the machine is started when loaded then start load will exceed motor capacity.

5. Feed the centrifuge evenly
   It is of great importance that the centrifuge is fed evenly to ensure the lowest level of residual moisture in the swarf.

The operator should always be aware of:

- the normal power consumption of the motor
- the normal outflow of solid particles
- the liquid content of the material
- the level of vibration

By considering the above mentioned factors and observing modifications one can be quite sure that the centrifuge will function properly.

Maintenance

ARBOGA-DARENTH 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 swarf 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 disassembly of the top lid.

Lubrication

The Swarf Centrifuge has grease lubricated bearings. The temperature is normally high, which is why high quality grease should be used.

Lubrication intervals should be adjusted to current operating conditions, although should be at least every six months during 1-shift operations.

Trouble-shooting

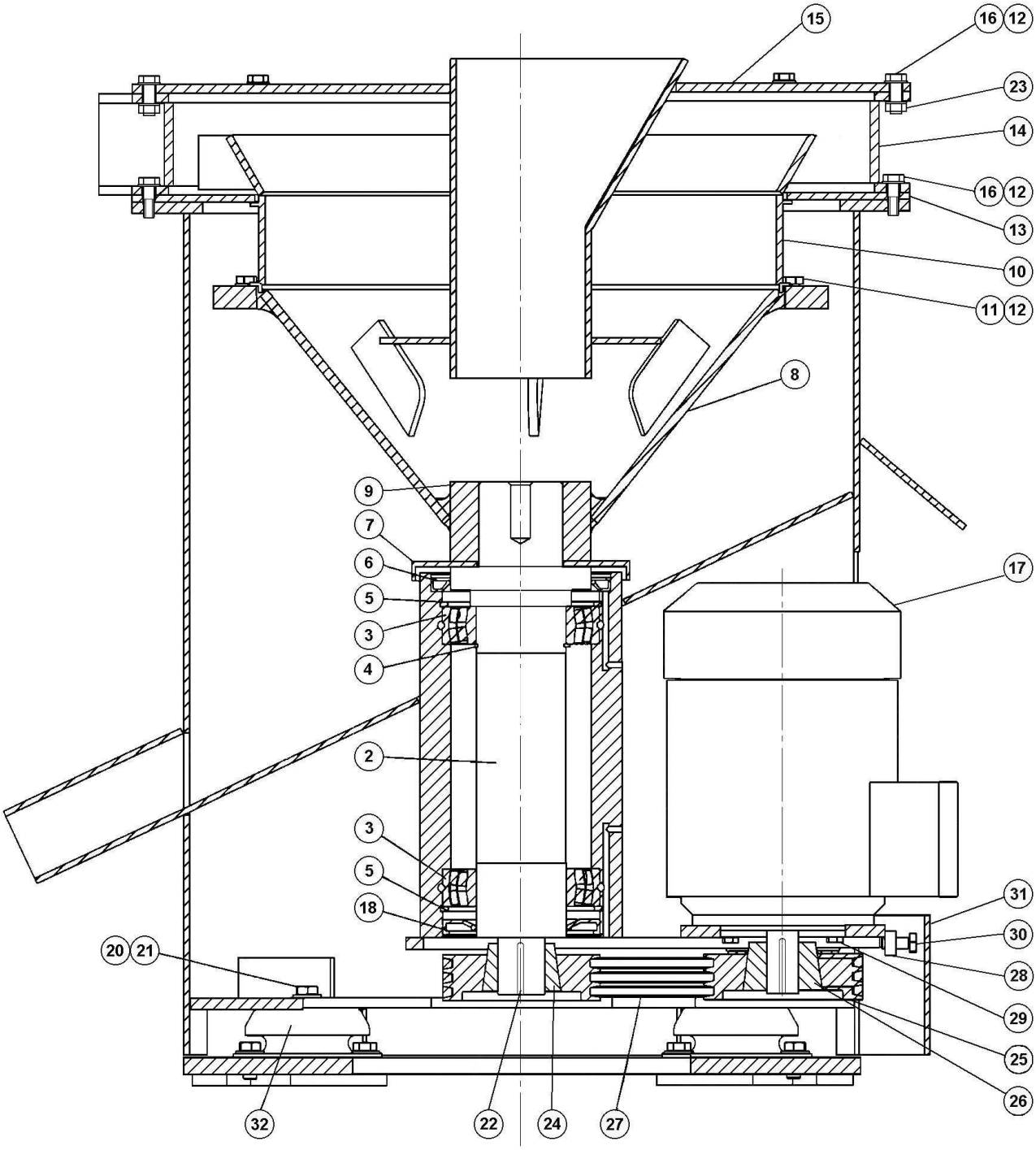
This trouble-shooting schedule only serves as a guide to probable reasons for faults. As mentioned earlier correct maintenance is the best insurance against the development of defects.

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

Spare parts list

NB! When ordering spare parts, please specify the following data:

- Type
- Serial number
- Designation
- Article number

Pos	Article No.	Denomination
2	9033013	Drive shaft
3	970108	Bearing
4	97039080	Clamp ring
5	970391140	Clamp ring
6	970705	Radial seal
7	9033014	Cover
8	981525	Drum
9	97031011080	Hexagon socket head cap screw
10	9033017	Screen, 0.50 mm
	9033043	Screen, 0.75 mm
11	97031001020	Hexagon-headed screw
12	970330009	Washer
13	9033022	Seal ring
14	9033023	Outlet section, blow
	9033044	Outlet section
15	9033028	Inlet, complete
16	97031001030	Hexagon-headed screw
17	96120	Motor
18	970728	Radial seal
20	970330011	Washer
21	97031001230	Hexagon-headed screw
22	970381240	Key
23	970320010	Nut
24	9702501	Bushing
25	9702402	Pulley
26	9702502	Bushing
27	9702415	V-belt
28	9033039	Motor bracket, complete
29	97031000820	Hexagon-headed screw
30	97031001025	Hexagon-headed screw
31	9033042	Cover
32	970601	Vibration absorber

Drawing – spare parts