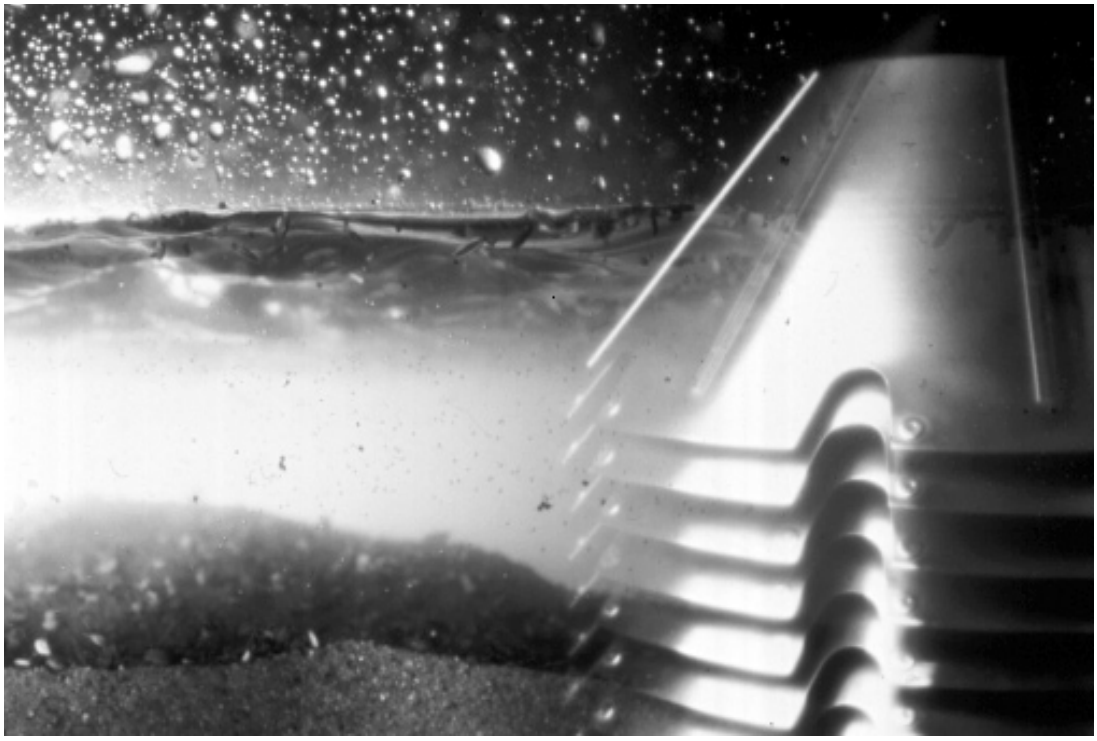
A L F A L A V A L S E P A R A T I O N

Installation Manual



Separator

VNPX 407SGP/SGT-34/SGP-34S

Product No. 881109-03-04/0
Book No. 1271288-02 V1

Alfa Laval

Alfa Laval Separation AB
Separator Manuals, dept. SKEL
S-147 80 Tumba, Sweden

Telephone: +46 8 53 06 50 00
Telefax: +46 8 53 03 10 40

Printed in Sweden, 99-07

© Alfa Laval Separation AB 1999

This publication or any part thereof may not be reproduced or transmitted by any process or means without prior written permission of Alfa Laval Separation AB.

Contents

1 Safety Instructions 7

2 Technical Reference 13

2.1 Technical data 13

2.2 PX sealing diagram 15

2.3 Connection list for hermetic design 16

2.4 Basic size drawing for hermetic design 18

2.4.1 Separator excl. connections 18

2.4.2 Dimensions of connections 19

2.5 Connection list for non-hermetic design 20

2.6 Basic size drawing for non-hermetic design 22

2.6.1 Separator excl. connections 22

2.6.2 Dimensions of connections 23

2.7 Interface description 24

2.7.1 General 24

2.7.2 Definitions 24

2.7.3 Component description and signal processing 25

2.7.4 Function graph and running limitations 26

2.8 Quality requirements for operating liquid 27

2.9 Foundation drawing 28

2.10 Electric motor 30

2.11 Interconnection diagram 32

2.12 Storage and installation 33

2.12.1 Introduction 33

2.12.2 Storage and transport of goods 33

2.12.3 Planning of installation 35

2.12.4 Foundations 39

2.13 Lifting instructions **40**

2.13.1 Separator **40**

2.13.2 Bowl **41**

2.13.3 Other parts **41**

Index **47**





Study instruction manuals and observe the warnings before installation, operation, service and maintenance.

Not following the instructions can result in serious accidents.

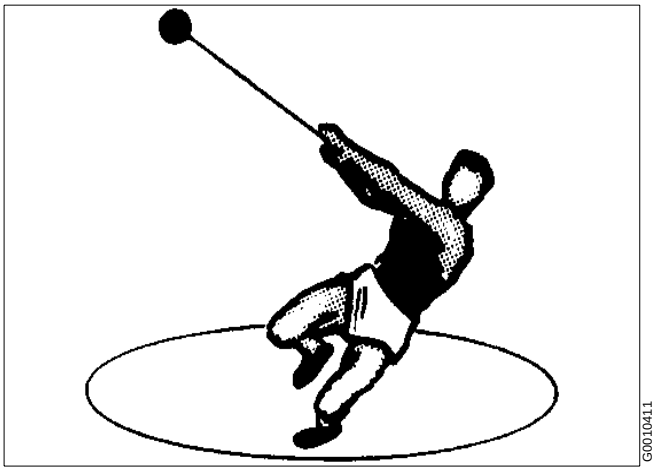
In order to make the information clear only foreseeable conditions have been considered. No warnings are given, therefore, for situations arising from the unintended usage of the machine and its tools.



1 Safety Instructions

The centrifugal separator includes parts that rotate at high speed. This means that:

- Kinetic energy is high
- Great forces are generated
- Stopping time is long



Manufacturing tolerances are extremely fine. Rotating parts are carefully balanced to reduce undesired vibrations that can cause a breakdown. Material properties have been considered carefully during design to withstand stress and fatigue.

The separator is designed and supplied for a specific separation duty (type of liquid, rotational speed, temperature, density etc.) and must not be used for any other purpose.

Incorrect operation and maintenance can result in unbalance due to build-up of sediment, reduction of material strength, etc., that subsequently could lead to serious damage and/or injury.

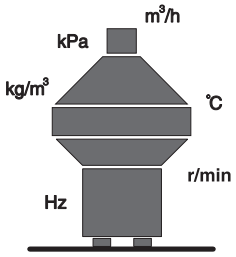
The following basic safety instructions therefore apply:

- **Use the separator only for the purpose and parameter range specified by Alfa Laval.**
- **Strictly follow the instructions for installation, operation and maintenance.**
- **Ensure that personnel are competent and have sufficient knowledge of maintenance and operation, especially concerning emergency stopping procedures.**
- **Use only Alfa Laval genuine spare parts and the special tools supplied.**

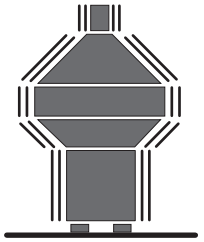
DANGER

Disintegration hazards

- Use the separator only for the purpose and parameter range specified by Alfa Laval.
- If excessive vibration occurs, **stop** separator and **keep bowl filled** with liquid during rundown.
- When power cables are connected, always check direction of motor rotation. If incorrect, vital rotating parts could unscrew.
- Check that the gear ratio is correct for power frequency used. If incorrect, subsequent overspeed may result in a serious break down.
- Welding or heating of parts that rotate can seriously affect material strength.
- Wear on the large lock ring thread must not exceed safety limit. ϕ-mark on lock ring must not pass opposite ϕ-mark by more than specified distance.
- Inspect regularly for **corrosion** and **erosion** damage. Inspect frequently if process liquid is corrosive or erosive.



S0051311



S0055611

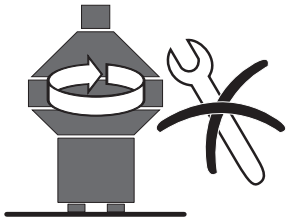
DANGER

Entrapment hazards

- Make sure that rotating parts have come to a **complete standstill** before starting **any** dismantling work.
- To avoid accidental start, switch off and lock power supply before starting **any** dismantling work.
- Assemble the machine **completely** before start. **All** covers and guards must be in place.

Electrical hazards

- Follow local regulations for electrical installation and earthing (grounding).



S0051111

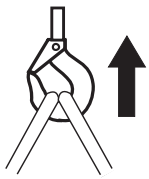


S0051011

WARNING

Crush hazards

- Use correct lifting tools and follow lifting instructions.
- Do **not** work under a hanging load.



S0051711

Noise hazards

- Use ear protection in noisy environments.



S0051611

CAUTION

Burn hazards

- Lubrication oil and various machine surfaces can be hot and cause burns.

Cut hazards

- Sharp edges on separator discs and lock ring threads can cause cuts.



S0055411



S0054311



Warning signs in the text

Pay attention to the safety instructions in this manual. Below are definitions of the three grades of warning signs used in the text where there is a risk for injury to personnel.



DANGER

Type of hazard

This type of safety instruction indicates a situation which, if not avoided, could result in **fatal injury** or fatal damage to health.



WARNING

Type of hazard

This type of safety instruction indicates a situation which, if not avoided, could result in **disabling injury** or disabling damage to health.



CAUTION

Type of hazard

This type of safety instruction indicates a situation which, if not avoided, could result in **light injury** or light damage to health.

NOTE

This type of instruction indicates a situation which, if not avoided, could result in damage to the equipment.



2 Technical Reference

2.1 Technical data

Alfa Laval ref. 555820, rev. 2

NOTE

The separator is a component operating in an integrated system including a monitoring system. If the technical data in the system description does not agree with the technical data in this instruction manual, the data in the system description is the valid one.

Product number	881109-03-04	
Separator type	VNPX 407SGP/SGT-34/SGP-34S	
Application	Wine and beer clarification	
Speed bowl, max.	7269/7312	r/min., 50/60 Hz
Speed motor shaft, max.	1500/1800	r/min., 50/60 Hz
Gear ratio	63:13/65:16	50/60 Hz
Hydraulic capacity, max.	12	m^3/h
Discharge volume, nominal	4-6	litres fixed discharge volume
Discharge interval, min.	1	minutes
Density of feed/sediment	1100/1525	kg/m^3
Feed temperature, min./max.	-5/100	°C
Density of operating liquid, max.	1 000	kg/m^3
Pressure operating liquid, max.	150	kPa
Weight of separator (without motor)	560	kg
Motor power	11	kW
Power consumption	4,5/10	kW (idling/at max. capacity)
Power consumption, max.	13	kW (at starting up)
Lubricating oil volume	8,0	litres
Stopping time, with brake	4-5	minutes
without brake	40	minutes (average)

Starting time, min./max.	3/4	minutes
Max. running time without flow;		
- empty bowl	480	minutes
- filled bowl	480	minutes
Sound power level	–	Bel(A)
Sound pressure level	79	dB(A)
Vibration level, max.	7,1/9,0	mm/s (new sep./sep. use)
Bowl inner diameter, max.	322	mm
Bowl volume	8,6	litres
Bowl weight	124	kg
Bowl body material	AL1112377-02	

There are other material than stainless steel in contact with the process fluid.

2.2 PX sealing diagram

Alfa Laval ref. 555819, rev. 1

The diagram illustrates the operational conditions required under which satisfactory sealing can be expected in solids-ejecting PX-type centrifugal separators.

No aspects of separation capabilities are included in the diagram.

The Y-axis shows the density of the sediment, i.e. the density of the solids/liquid mixture that accumulates at the bowl periphery during operation. Accordingly, this is a lower value than that of the density of the solid particles only.

The X-axis shows the density of the feed. The triangular area called “Admitted operational area” illustrates the permissible combinations of densities where no leakage should occur.

ρ_s = *Sediment density*
ρ_f = *Feed density*

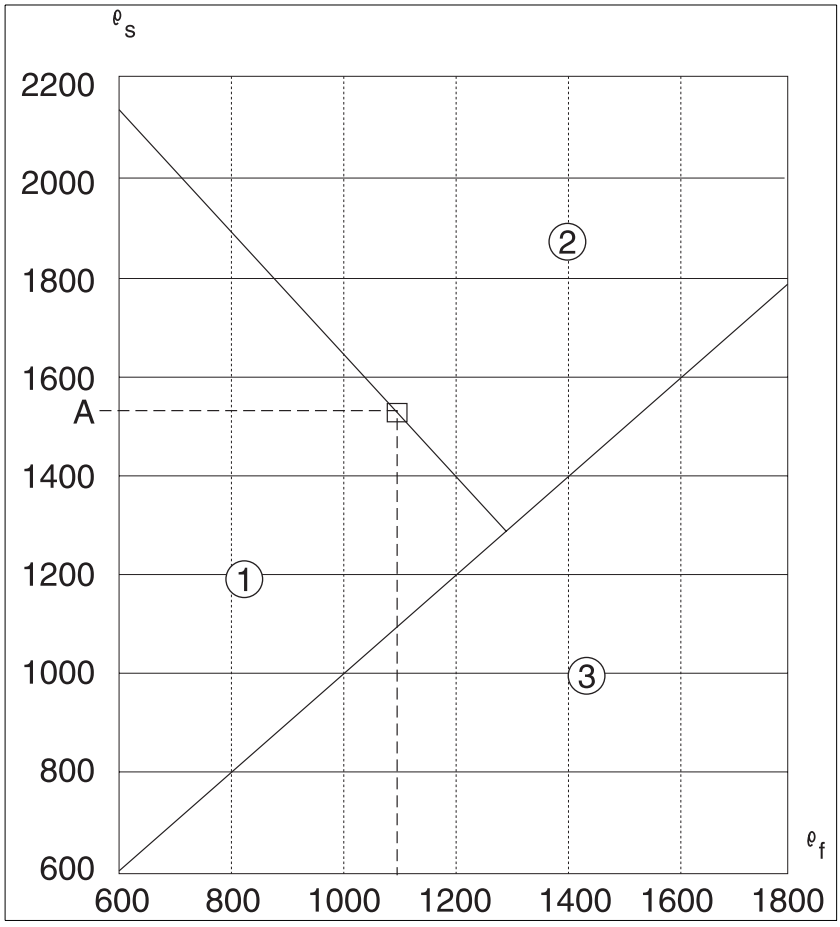
1 = Admitted operational area
2 = Sealing not possible within this area
3 = Non physical area (feed density higher than sediment density)

Example:
If the density of the sediment is max. 1525 kg/m^3 (A), the max. admitted density of the feed will be about 1100 kg/m^3).

Note!*The max. admitted values of densities refer to the properties of the bowl. See the System Manual (if any) for the max. values admitted for the system, which normally are lower.*

Separator bowl speed max. 7269 r/min

Max. allowed density of operating liquid: 1000 kg/m^3



2.3 Connection list for hermetic design

Alfa Laval ref. 563410, rev. 0

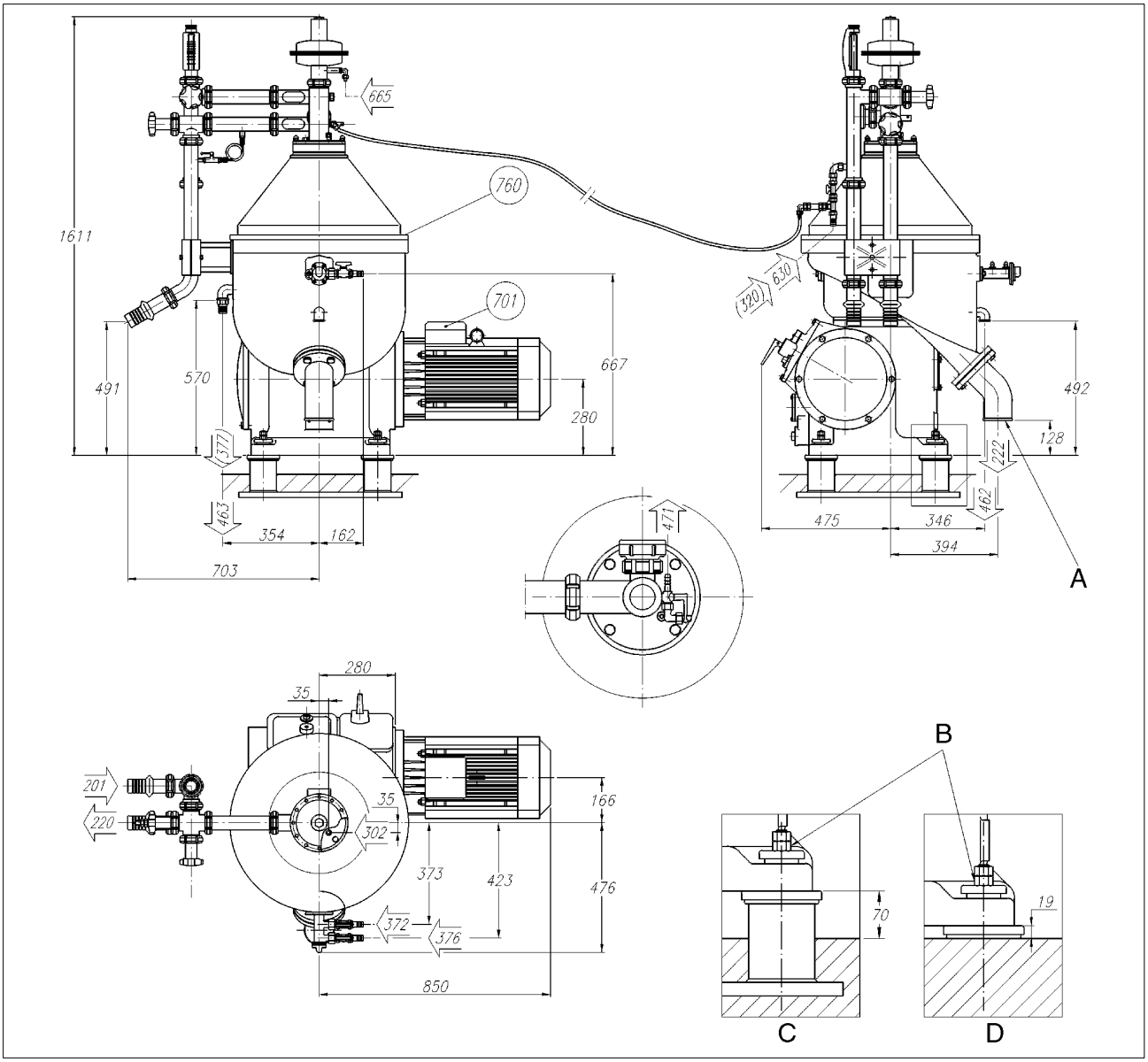
Connection No.	Description	Requirements/limits
201	Inlet for process liquid	
	- Max. allowed density	See “2.1 Technical data” on page 13
	- Allowed flow	Max. 12 m^3/hour
	- Allowed temperature, min./max.	-5 /100 °C
220	Outlet for clarified liquid (light phase)	
222	Outlet for solid phase	
	- Small discharge	4-6 litres
	- Discharge frequency	Max. 60 discharges/hour
302	Flushing above the bowl	
	- Normally used only in the discharge sequence and/or for cleaning	
	- Pressure	100-600 kPa
	- Pressure recommended	300 kPa
	- Flow (momentary at rec. pressure)	300 litres/hour
	- Consumption	0-5 litres/discharge
320	CIP-inlet (common with inlet 630)	
372	Inlet of discharge liquid	
	- Discharge time, pause, closing time	1,2; 1,0; 1,2 s (160 kPa)
	- Discharge time, pause, closing time	0,5; 0,8; 0,5 s (300 kPa)
	- Pressure, Min./Max.	150/300 kPa
376	Inlet of make-up liquid	See demand in chapter “2.8 Quality requirements for operating liquid” on page 27
	- Max. density	1000 kg/m^3
	- Consumption	0-10 litres/hour
	- Pressure	15-20 kPa

Connection No.	Description	Requirements/limits
377	Outlet for operating liquid (Common with outlet 463)	
462	Drain of frame top part, lower	
463	Drain of frame top part, upper (Common with outlet 377)	
471	Drain from outlet pipe	
630	Inlet for sealing liquid (common with inlet 320) - Quality requirements - Consumption	 See ‘‘2.8 Quality requirements for operating liquid” on page 27 100 litres/hour
665	Inlet for sealing liquid - Quality requirements - Water pressure	 See ‘‘2.8 Quality requirements for operating liquid” on page 27 50 kPa
701	Motor for separator - Allowed frequency variation	 ± 5%
760	Cover interlocking switch - Type - Switch rating, resistive load, max. **AC** **DC** 12 V 75 VA 7 W 24 V 200 VA 7 W 48 V 280 VA 9 W 127 V 500 VA 13 W 230 V 550 VA –	See ‘‘2.7 Interface description’’ on page 25 Mechanical switch

2.4 Basic size drawing for hermetic design

2.4.1 Separator excl. connections

Alfa Laval ref. 563390, rev. 0



A. Maximum vertical displacement at the sludge connections during operation ±10 mm.

B. Tightening torque 20 Nm. Secured with counter nut.

C. For grouting in.

D. For skid.

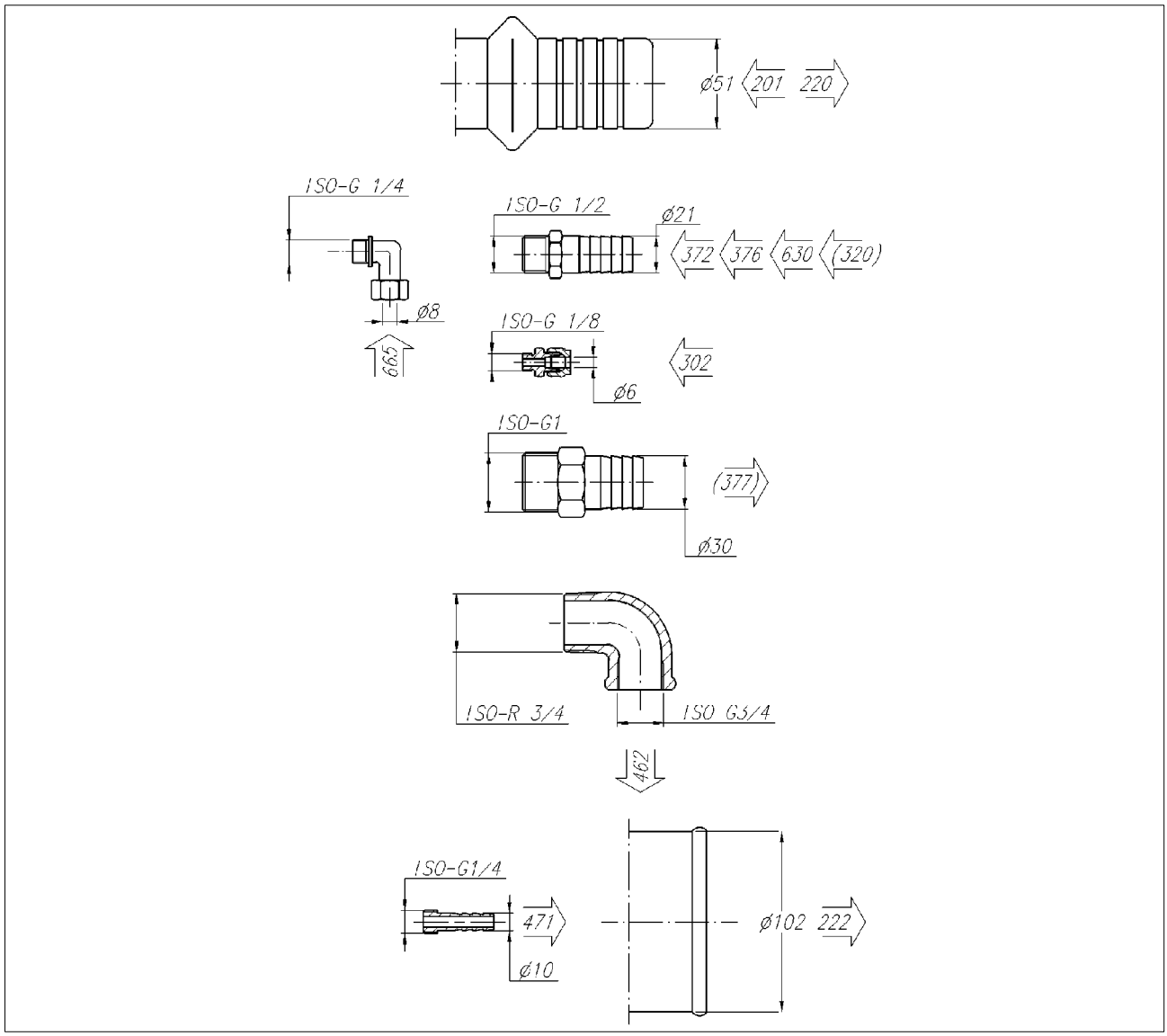
All connections to be installed non-loaded and flexible.

All dimensions are nominal. Reservation for individual deviations due to tolerances.

Data for connections see “2.3 Connection list for hermetic design” on page 16

2.4.2 Dimensions of connections

Alfa Laval ref. 563390, rev. 0



2.5 Connection list for non-hermetic design

Alfa Laval ref. 563452, rev. 0

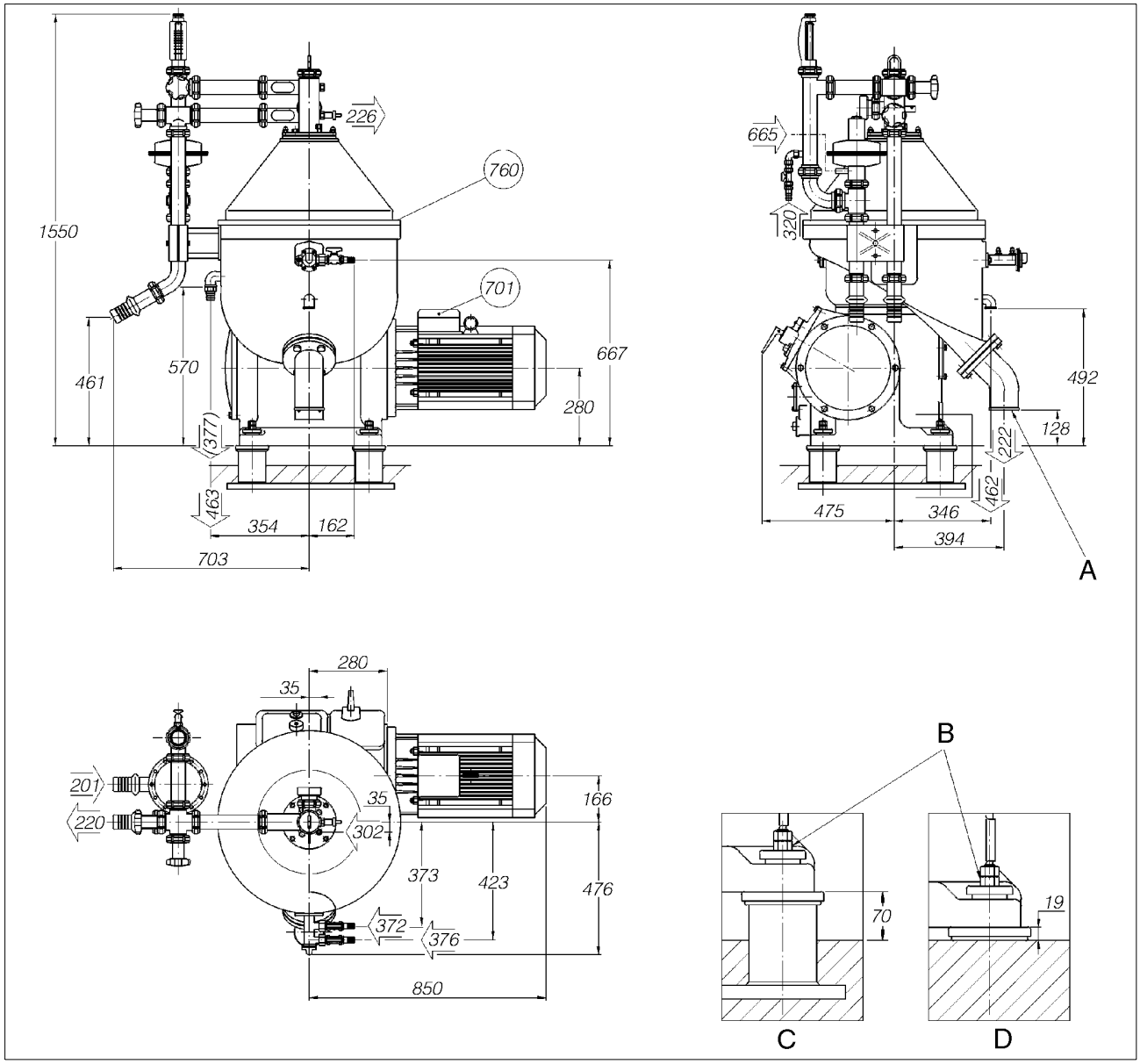
Connection No.	Description	Requirements/limits
201	Inlet for process liquid	
	- Max. allowed density	See “2.1 Technical data” on page 13
	- Allowed flow	Max. 12 m^3/hour
	- Allowed temperature, min./max.	-5/100 °C
220	Outlet for clarified liquid (light phase)	
222	Outlet for solid phase	
	- Small discharge	4-6 litres
	- Discharge frequency	Max. 60 discharges/hour
226	Sampling outlet	
302	Flushing above the bowl	
	- Normally used only in the discharge sequence and/or for cleaning	
	- Pressure	100-600 kPa
	- Pressure recommended	300 kPa
	- Flow (momentary at rec. pressure)	300 litres/hour
	- Consumption	0-5 litres/discharge
320	CIP-inlet	
372	Inlet of discharge liquid	
	- Discharge time, pause, closing time	1,2; 1,0; 1,2 s (160 kPa)
	- Discharge time, pause, closing time	0,5; 0,8; 0,5 s (300 kPa)
	- Pressure, min./max.	150/300 kPa

Connection No.	Description	Requirements/limits
376	Inlet of make-up liquid - Max. density - Consumption - Pressure	See demand in chapter ‘‘2.8 Quality requirements for operating liquid” on page 27 1000kg/m^3 0-10 litres/hour 15-20 kPa
377	Outlet for operating liquid (Common with outlet 463)	
462	Drain of frame top part, lower	
463	Drain of frame top part, upper (Common with outlet 377)	
665	Inlet for sealing liquid - Quality requirements - Water pressure	 See ‘‘2.8 Quality requirements for operating liquid” on page 27 50 kPa
701	Motor for separator - Allowed frequency variation	 ± 5%
760	Cover interlocking switch - Type - Switch rating, resistive load, max. **AC** **DC** 12 V 75 VA 7 W 24 V 200 VA 7 W 48 V 280 VA 9 W 127 V 500 VA 13 W 230 V 550 VA –	See ‘‘2.7 Interface description’’ on page 25 Mechanical switch

2.6 Basic size drawing for non-hermetic design

2.6.1 Separator excl. connections

Alfa Laval ref. 563411, rev. 0



A. Maximum vertical displacement at the sludge connections during operation ±10 mm.

B. Tightening torque 20 Nm. Secured with counter nut.

C. For grouting in.

D. For skid.

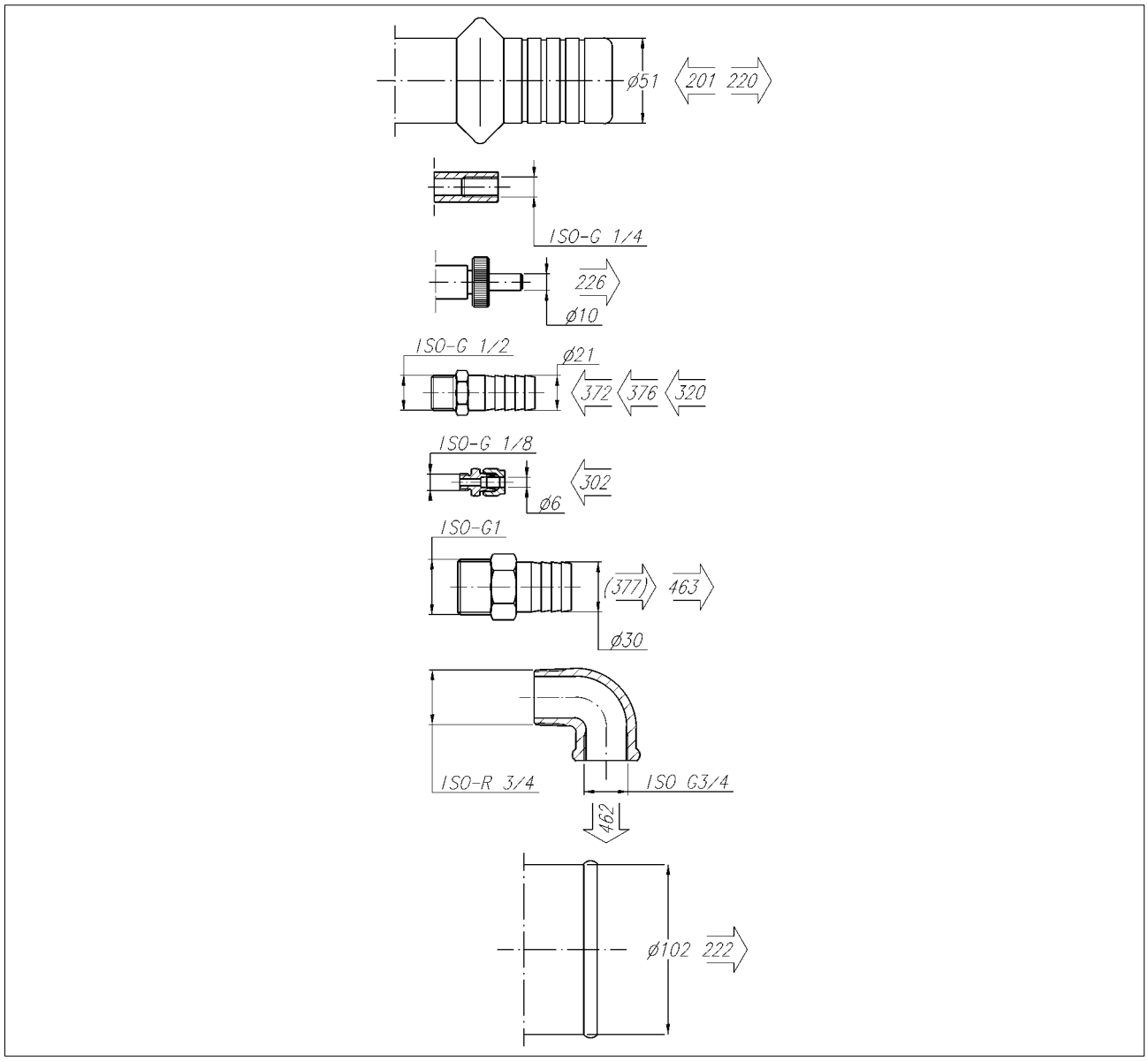
All connections to be installed non-loaded and flexible.

All dimensions are nominal. Reservation for individual deviations due to tolerances.

Data for connections see “2.5 Connection list for non-hermetic design” on page 20.

2.6.2 Dimensions of connections

Alfa Laval ref. 563411, rev. 0



2.7 Interface description

Alfa Laval ref. 556717, rev. 1

2.7.1 General

In addition to the connection list this document describes limitations and conditions for safe control, monitoring and reliable operation. At the end of the document a function graph and running limitations are found.

2.7.2 Definitions

Ready for start means:

- The separator is assembled correctly.
- All connections are installed according to Connection list, Interconnection diagram and Interface description.

Start means:

- The power to the separator is on.
- The acceleration is supervised to insure that a certain speed has been reached within a certain time. See technical data.

The start procedure continues until the full speed has been reached and a stabilization period has passed (about 1 minute).

Normal stop means:

- Stopping of the machine at any time with or without safety/backup liquid with brake applied.

Safety stop means:

The separator must be stopped in the quickest and safest way due to vibrations or process reasons.

Comply to following conditions:

- The bowl must be kept filled.
- Sludge ejection must not be made.
- The separator must not be restarted before the reason for the Safety stop has been investigated and action has been taken.
- In case of emergency condition in the plant, the separator must be stopped in a way that is described in EN 418.

2.7.3 Component description and signal processing

Separator motor 701

The separator is equipped with a 3-phase DOL (direct on line) started motor. The separator can also be started by a Y/D starter, but then the time in Y-position must be maximized to 5 seconds.

Cover interlocking switch 760

The cover of the separator is equipped with an interlocking switch. When the cover is closed the interlocking circuit in the starter control is closed and the separator could be started.

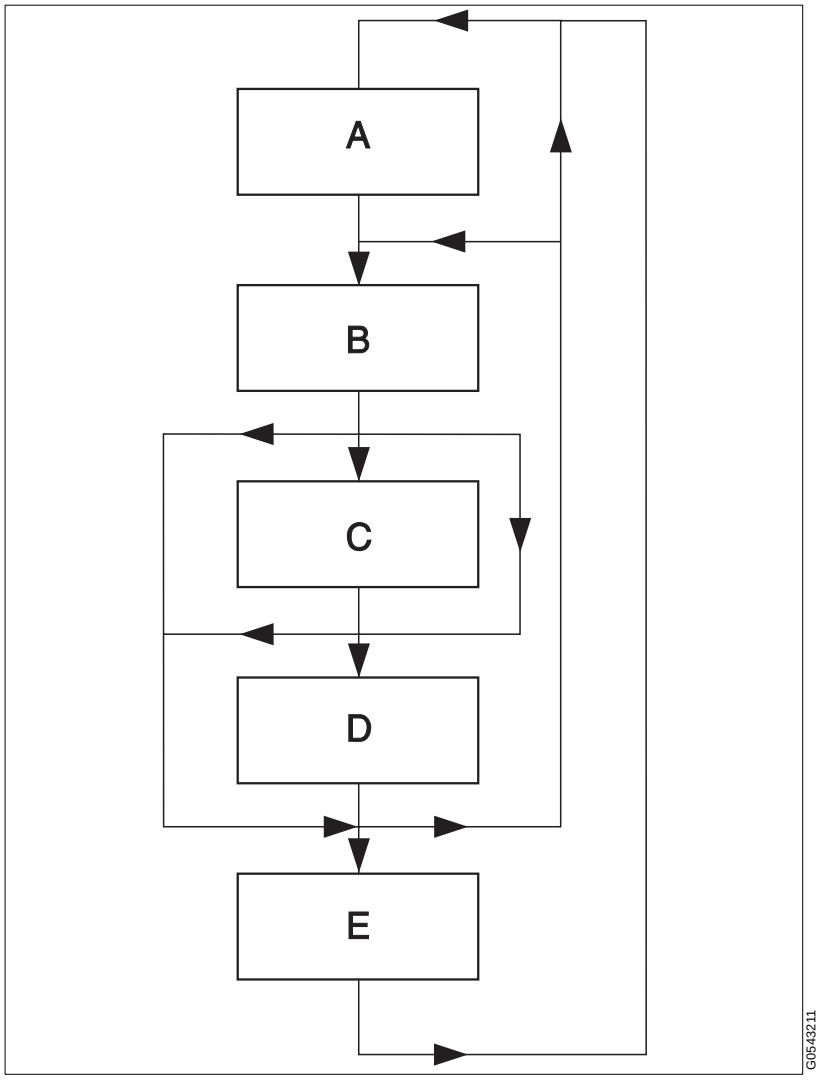
Signal processing

The circuit is closed when the frame hood of the separator is closed. The interlocking switch should be connected so that starting of the motor is prevented when the separator hood is not closed.

Discharge

At indication of the absence of a sludge discharges, the operator or the control system must initiate a new discharge. At indication of two consecutive sludge discharges, an alarm must be given and action must be taken.

2.7.4 Function graph and running limitations



A. Stand still
B. Starting mode
C. Running mode
D. Stop mode
E. Safety stop mode

2.8 Quality requirements for operating liquid

Alfa Laval ref. 553406, rev. 5

Operating water is used in the separator for several different functions: e.g. to operate the discharge mechanism, to lubricate and cool mechanical seals, etc.

Poor quality of the operating water may with time cause erosion, corrosion and/or operating problem in the separator and must therefore be treated to meet certain demands.

The following requirements are of fundamental importance

1.1 Turbidity-free water, solids content <0,001% by volume.

Deposits must not be allowed to form in certain areas in the separator.

1.2 Max particle size 50 μm.

2. Total hardness less than 180 mg $CaCO_3$ per litre, which corresponds to 10 °dH or 12,5 °E.

Hard water may with time form deposits in the operating mechanism. The precipitation rate is accelerated with increased operating temperature and low discharge frequency. These effects become more severe the harder the water is.

3. Chloride content max 100 ppm NaCl (equivalent to 60 mg Cl/l).

Chloride ions contribute to corrosion on the separator surfaces in contact with the operating water, including the spindle. Corrosion is a process that is accelerated by increased separating temperature, low pH, and high chloride ion concentration.

A chloride concentration above 60 mg/l is not recommended.

4. pH>6

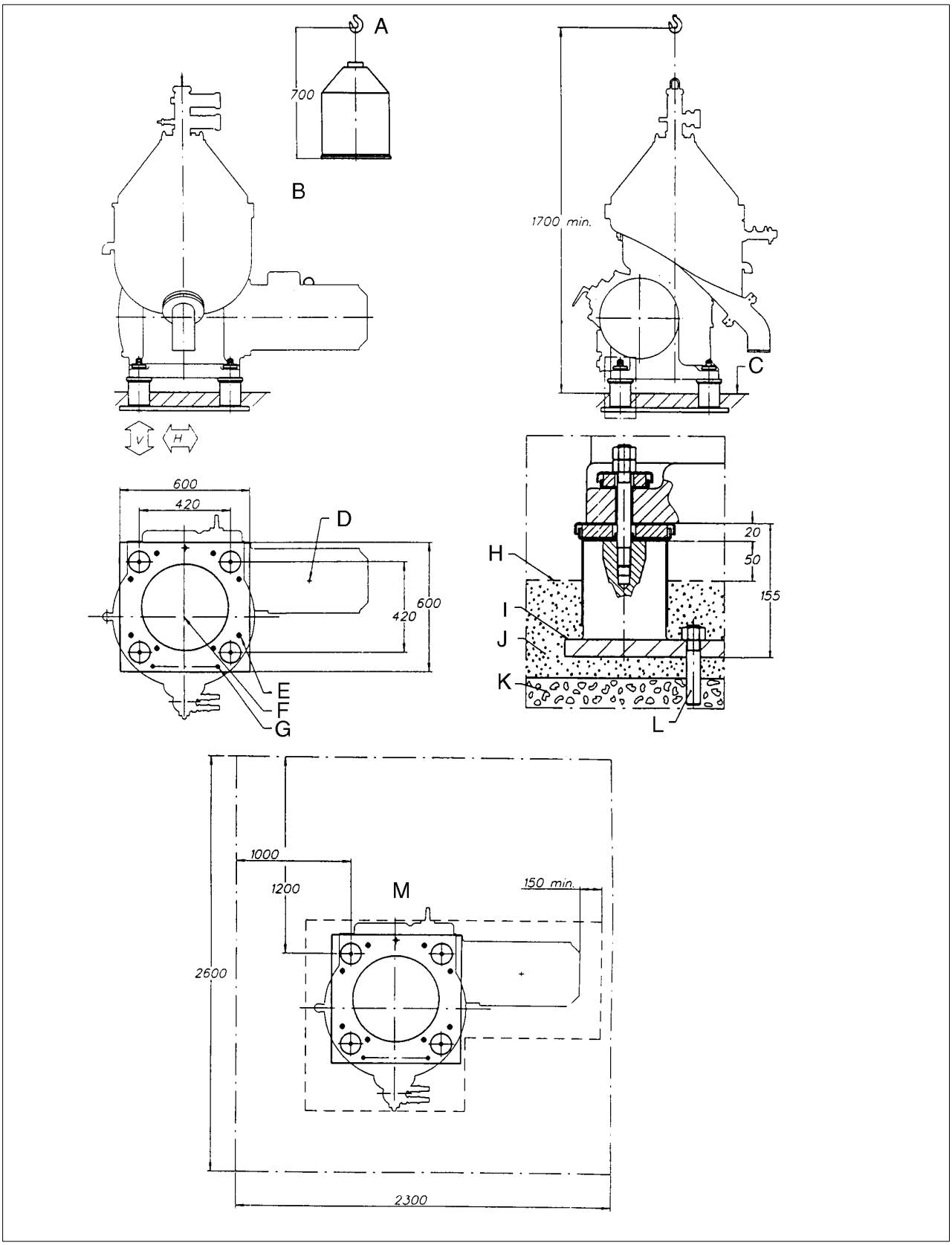
Increased acidity (lower pH) increases the risk for corrosion; this is accelerated by increased temperature and high chloride ion content.

NOTE

Alfa Laval accepts no liability for consequences arising from unsatisfactorily purified operating water supplied by the customer.

2.9 Foundation drawing

Alfa Laval ref. 555816, rev. 0



A. *Min. lifting capacity when doing service: 100 kg*
B. *Max. height of largest component incl. lifting tool.*
Recommended speed for lifting:
Low speed: 0,5-1,5 metres/minute
High speed: 2-6 metres/minute
C. *Max. horizontal deviation: 0,4°*
D. *Centre of motor*
E. *8 holes Ø 20 for anchorage*
F. *Centre of separator bowl*
G. *3 holes M16 for horizontal adjustment.*
H. *Floor level*
I. *Foundation plate*
J. *Expanding concrete*
K. *Structural concrete*
L. *Anchor bolt. E.g adhesive anchor cartridge.*
M. *Service side*

Recommended free floor space for unloading when doing service

No fixed installation within this area



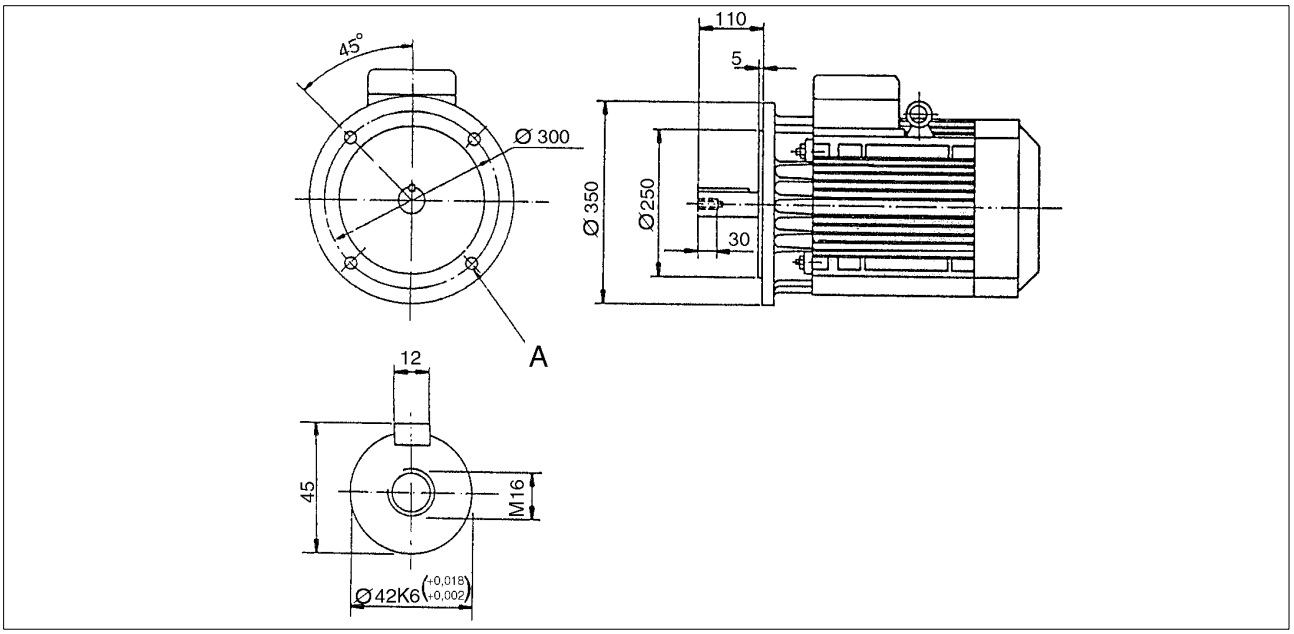
Vertical force not exceeding 7 kN/foot



Horizontal force not exceeding 10 kN/foot

2.10 Electric motor

Alfa Laval ref. 540472, rev. 3



A. 4 holes, Ø18

Manufacturer	Not fixed
Standards	IEC 72-2, 34-1, CENEL/2B
Size	160M
Type	Basic type (unwound motor)
Weight	75-90 kg
Poles	4
Method of cooling	IC 41 (IEC 34-6)

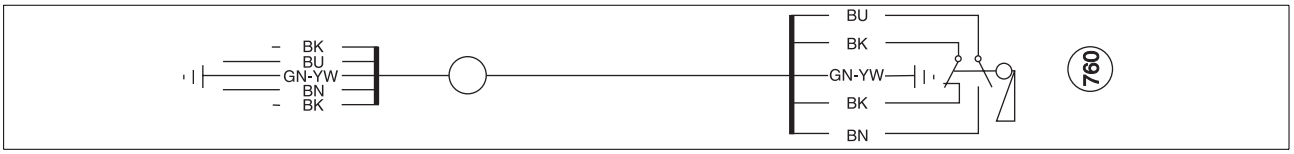
Type of mounting (IEC 34-7)		**Degree of protection** (IEC 34-5)
	IM 3001	IP 54

Article No.	Output kW	Freq Hz	Voltage V
539827-10	11	60	220D
539827-11	11	60	380D
539827-12	11	60	440D
539827-13 1)	11	60	575D
539827-15	11	50	400D
539827-17	11	60	460D
539827-18	11	60	220D parallel 440D serie
539827-20 1)	11	60	460D
539827-21	11	50	200D
539827-22	11	50	220D
539827-23	11	50	380D
539827-24	11	50	415D
539827-25	11	50	500D
539827-26	11	50	660D
539827-27	11	60	200D

1) CSA Labeled.

2.11 Interconnection diagram

Alfa Laval ref. 557700 rev.0



Wire colour codes:
BK = black
BN = brown
BU = blue
GN-YW = green-yellow

760 - Cover interlocking switch (frame top part). Normally open when cover not fitted.

2.12 Storage and installation

2.12.1 Introduction

First of all, ensure that the separator delivered is suitable for the application. Elements that are important to consider are, e.g., process liquid density and temperature, corrosion characteristics, sludge characteristics, solids contents of the process liquid, toxicity, inflammability, degree of automation, etc.

Most of the installation instructions are *Specifications*, which are compulsory requirements. These specifications are sometimes completed with non-compulsory *Recommendations*, which could improve the installation quality.

Additional installation information, such as drawings, connection lists and interface description, can be found previous in this chapter.

2.12.2 Storage and transport of goods

Storage

Specification

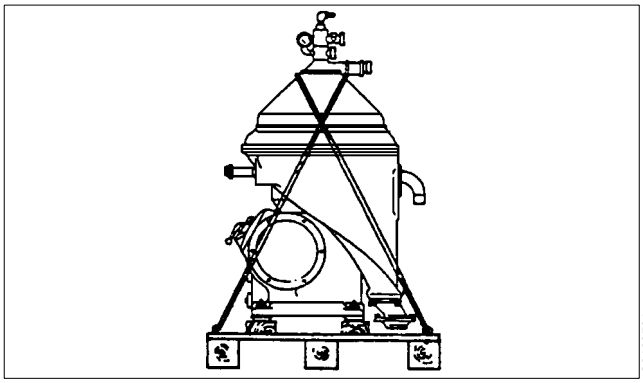
Upon arrival to the store, **check all components and keep them:**

1. Well stored and protected from mechanical damage.
2. Dry and protected from rain and humidity.

A separator can be delivered with different types of protection:

- Fixed on a pallet.

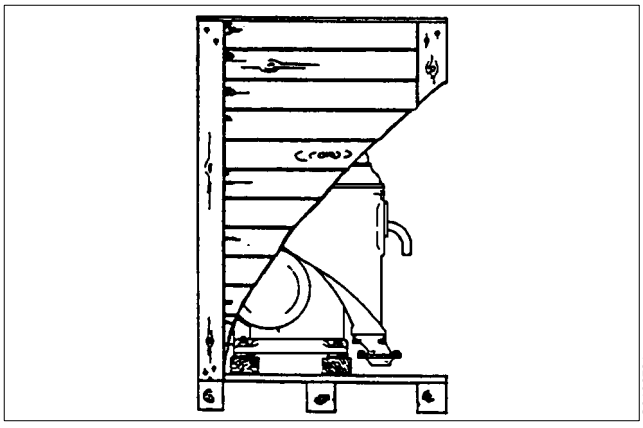
  The separator must be stored in a storage room well protected from mechanical damage and also dry and protected from rain and humidity.



Fixed on a pallet

- In a wooden box which is not water tight.

  The separator must be stored dry and protected from rain and humidity.

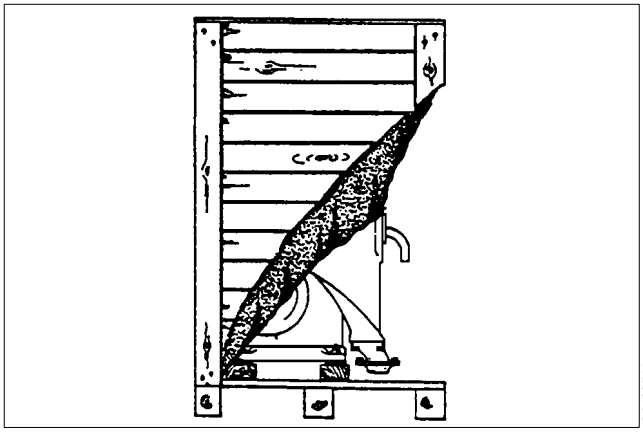


In a wooden box which is not water tight

- In a special water-resistant box for outdoor storage.

  The separator and its parts have been treated with an anti-corrosion agent. Once the box has been opened, store dry and protected from rain and humidity.

  The packaging for outdoor storage is only to special order.



In a special water-resistant box for outdoor storage

Transport

Specification

- During transport of the separator, the bowl **must always be removed from the machine.**
- When lifting a separator it must always be **hung securely**. See chapter ‘‘2.13 Lifting instructions” on page 40.

WARNING

Crush hazards

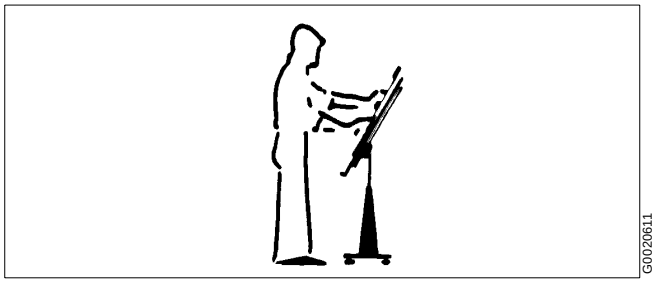
Use correct lifting tools and follow lifting instructions.

- During erection, all inlets and outlets to separators and accessories must be covered to be protected from dirt and dust.

2.12.3 Planning of installation

Introduction

The space required for one or more separators can be calculated by consulting the drawings in the chapters ‘‘2.5 Connection list for non-hermetic design” on page 20, ‘‘2.6 Basic size drawing for non-hermetic design” on page 22, ‘‘2.9 Foundation drawing” on page 28 and instructions for ancillary equipment, electrical and electronic equipment and cables.

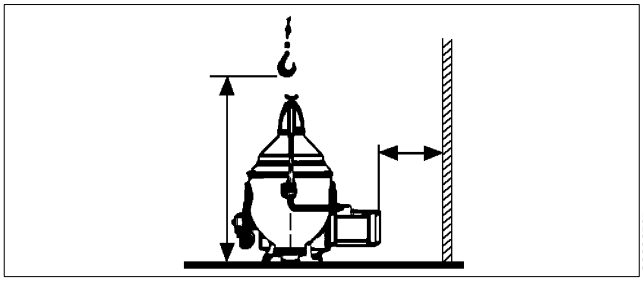


Check the drawings when planning the installation

Important measurements

Important measurements are the minimum lifting height for lifting tackle, shortest distance between driving motor and wall, free passage for dismantling and assembly, maintenance and operation.

Plan your installation with sufficient room for the controls and operation so that instruments are easily visible. Valves and controls must be within convenient reach. Pay attention to space requirements for maintenance work, work benches, dismantled machine parts or for a service trolley.



Suitable space must be obtained for the maintenance work

Space for separator

The separator shall be placed in such a way that suitable space for maintenance and repair is obtained.

Specification

- See chapter “2.9 Foundation drawing” on page 28 for the service space required with the separator installed.

Recommendation

- The spanner for the large lock ring should have sufficient space to make a complete turn without touching any of the ancillary equipment surrounding the separator.

Lifting height for transport of bowl

Specification

- A minimum height is required to lift the bowl, bowl parts and the bowl spindle, see chapter “2.9 Foundation drawing” on page 28**.**

Recommendation

- When two or more separators are installed, the lifting height may have to be increased to enable parts from one separator to be lifted and moved over an adjoining assembled separator.

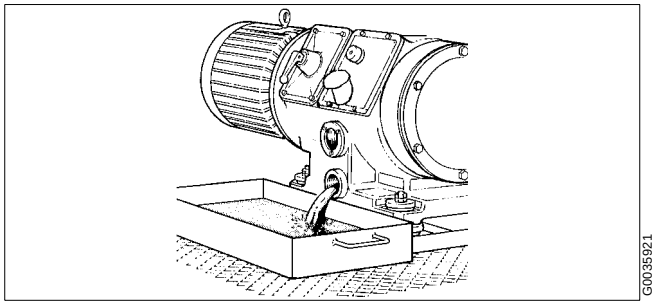
Space for oil changing

Specification

The plug for gearbox oil draining must not be blocked by floor plate arrangement, etc.

Recommendation

- It should be possible to place a portable collecting tray under the gearbox drain plug for changing oil.



Place the separator in such a way that makes the oil change easy

Connections to surrounding equipment

Specification

- If the local safety regulations prescribe that the installation has to be inspected and approved by responsible authorities before the plant is put into service, consult with such authorities before installing the equipment and have the projected plant approved by them.
- Ensure that all service media (compressed air, electric power, operating, cooling and safety liquids etc.) required for the separator have the correct quality and capacity. In cases where supply failure of the service media might cause damage, automatic supervision is recommended. This applies to operating media for solids discharging separators where a failure could cause unbalance or water leakage into the lubricating oil.
- If the starting equipment containing the main switch is placed in such a position that it cannot be seen from the separator, most local safety regulations require that a separate safety switch must be installed in the power supply to the separator motor.
- As the separator stands on soft rubber mountings, **always** design the pipe-work to and from the separator in such a way that there will be sufficient flexibility. Possible vibration should not be allowed to be transmitted via the piping.

  For specification of flexibility for feed inlet and outlets, see ‘‘2.4 Basic size drawing for hermetic design” on page 18, ‘‘2.6 Basic size drawing for non-hermetic design” on page 22.

- Only motors (including necessary monitoring equipment) specified by Alfa Laval may be fitted to the separator. Violation of this can cause severe damage and create a safety risk for the personnel. Motor drives of variable speed must not be used unless approved by Alfa Laval and used in combination with appropriate safety devices.
- Design the system is such a way that there is always an open outlet for liquid from the bowl casing drain outlet.
- If the sediment from the separator is discharged into a tank, this tank must be sufficiently ventilated. The connection between the separator and the tank must be of the size and configuration specified.
- If the solids are discharged from the separator bowl casing into a closed system, ensure that this system cannot be overfilled or closed in such a way that the solids cannot leave the bowl casing. This could cause a hazardous situation.

2.12.4 Foundations

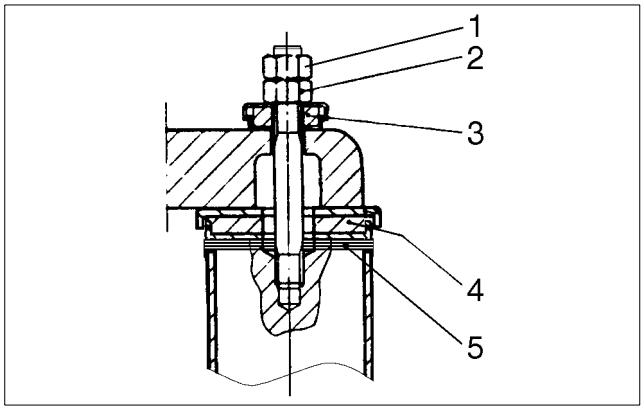
NOTE

When lifting a separator it must always be **hung securely**. See chapter "2.13 Lifting instructions" on page 40.

Specification

- The separator should be installed at floor level, see chapter "2.9 Foundation drawing" on page 28**.**
- The separator must be installed on a strong and rigid foundation to reduce the influence of vibrations from adjacent machinery.
- Fit the separator frame on the foundation as follows:
  - Place the separator frame without cushions in position.
  - Check that the bolts do not press against the edges of the holes, otherwise the elasticity of the mounting of the separator frame will be impeded.
  - Fit height adjusting washers (5) required.
  - Check that the separator frame is horizontal and that all feet rest on the foundation.
  - Lift the separator frame, fit the vibration dampers (3, 4), lower and check that the bolts do not press against the edges of the holes.
  - Tighten nut (2) with **20 Nm**. Hold firmly and secure with the lock nut (1). Repeat for the other frame feet.

Further information can be found in chapter "2.4 Basic size drawing for hermetic design" on page 18.



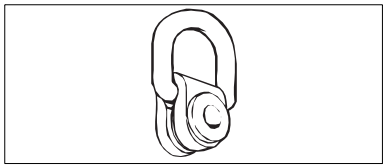
1. *Lock nut*
2. *Nut*
3. *Vibration damper, upper*
4. *Vibration damper, lower*
5. *Adjusting washers*

2.13 Lifting instructions

Alfa Laval ref. 553677, rev. 1

2.13.1 Separator

Attach three endless slings or cables to the lifting eyes (the screws must be tightened with spanner).



NOTE

Machine weight without frame hood and bowl is approx. **600 kg**.

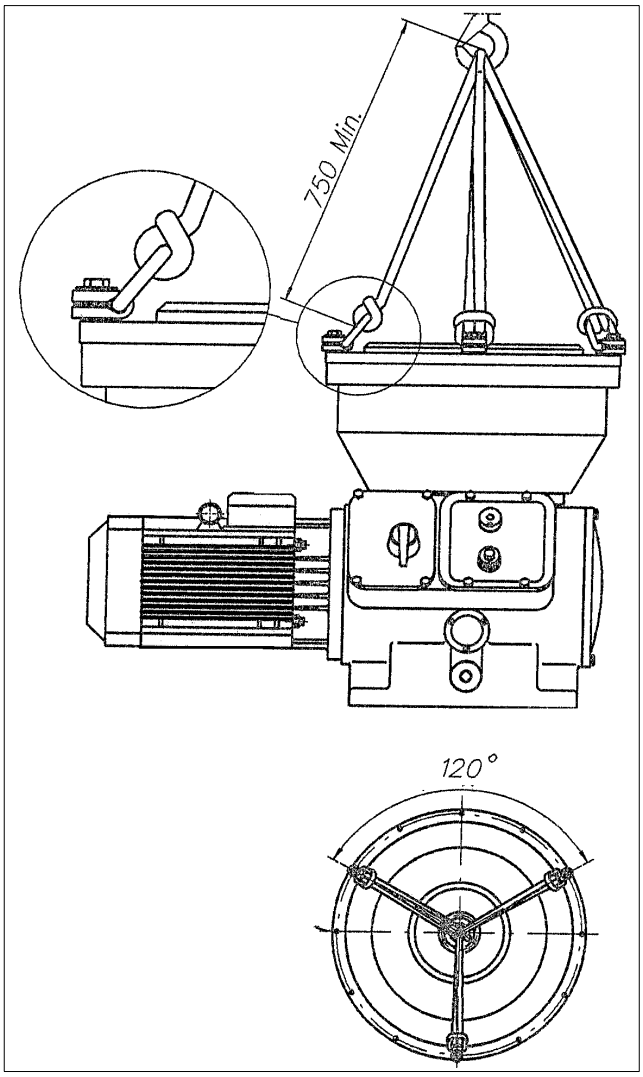
Do not lift the separator unless the inlet, outlet, frame hood and bowl have been removed.

WARNING

Crush hazards

Use only the three **special lifting eyes** for lifting the separator.

A falling separator can cause accidents resulting in serious injury to persons and damage to equipment.

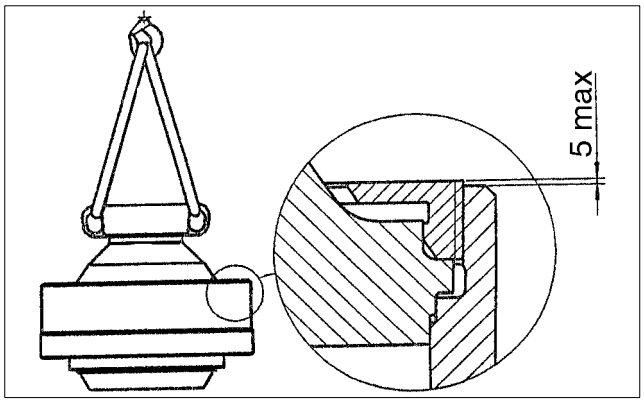


Lift the separator with the inlet, outlet, frame hood and bowl removed.

2.13.2 Bowl

This instruction describes how to lift a complete bowl, which normally is done only during a transport of the separator.

When lifting the bowl, use the special lifting tool fastened on the bowl hood.



The lock ring must be properly tightened when lifting the bowl.

NOTE

Check that the lock ring is properly tightened.

The height of the lock ring above the bowl body must not exceed **5 mm**, see illustration.

Weight to lift is approx. **150 kg**.

When lifting the bowl out of the separator frame, the cap nut fixing the bowl to the bowl spindle and the screws fixing the bowl body to the operating water device must first be removed.

2.13.3 Other parts

The frame hood and the heavy bowl parts must be lifted by means of a hoist. Position the hoist exactly above the bowl centre. Us endless lifting straps and a lifting hook with safety catch.

Special tools from the tool kit must be used for dismantling and assembly. The special tools are specified in the *Spare Parts Catalogue* and are shown as illustrations together with the dismantling/assembly instructions.

NOTE

When lifting parts without weight specifications, always use lifting straps with the capacity of at least **500 kg**.

Reader’s Comment Form

Dear reader,

It is our ambition to produce as useful and instructive manuals as possible. Should you have any comments (positive or negative) regarding this manual, please note them down and send them to us. You can do this by copying this page and sending it by fax, or you could mail it, or hand it over to your local Alfa Laval representative.

Alfa Laval Separation AB, Separator Manuals, dept. SKEL, S-147 80 Tumba, Sweden.
Fax: +46 8 53031040.

Your name: Company:

Address: City:

Country:

Product: VNPX 407SGP/SGT-34/SGP-34S Book No.: 1271288-02 V1

Date:

	Yes	No
Is it easy to find what you are looking for by using the table of contents?	❒	❒
Are the chapter and section headings clear and adequate?	❒	❒
Is the information presented in the correct order for your purposes?	❒	❒
Does the information in the manual cover your needs?	❒	❒
Is it easy to understand the instructions in the manual?	❒	❒
Is the terminology sufficiently explained?	❒	❒
Are the illustrations easy to understand?	❒	❒

Your comments:

Order Form

If you wish to order extra copies of this manual, please copy this page and give it to your local Alfa Laval representative, who will advise you of current prices.

Your local Alfa Laval representative will also be able to help you with information regarding any other manuals.

Your name:		Company:	
Address:		City:	
Country:			
Product:	VNPX 407SGP/SGT-34/ SGP-34S	Book No.:	1271288-02 V1
Quantity:		Date:	

Comments:

Index

B

Basic size drawings
- Hermetic design 18
- Non-hermetic design 22

Bowl
- Sealing diagram 15
- Volume, total 14

C

Connection dimensions
- Hermetic design 19
- Non-hermetic design 23

Connection list
- Hermetic design 16
- Non-hermetic design 20

Cover interlocking switch
- Connection list hermetic design 17
- Connection list non-hermetic design 21
- Interconnection diagram 32
- Interface description 25

D

Density of feed 13

Drawings
- Basic size, hermetic design 18
- Basic size, non-hermetic design 22
- Dimensions of connections hermetic design 19
- Dimensions of connections non-hermetic design 23
- Electric motor 30
- Foundation 28

E

Electric motor. See Motor

F

Foundation
- Drawing 28
- Installation 39

Frame feet
- Installation 39

G

Gear
- Number of teeth 13

I

Installation
- Planning of installation 35

Interconnection diagram 32

L

Lifting instructions 40

Lubricants
- Volume of lubricating oil 14

M

Materials 13

Motor
- Drawing 30
- Interface description 25
- Power consumption 13

N

Noise 13

O

Operating liquid, quality requirements 27

P

Power consumption 13

Process capacity 13

Q

Quality requirements
- Operating liquid 27

R

Revolution
- Number of revolutions 13

S

Safety Instructions 7
Sealing diagram for bowl 15
Separator
- Basic size drawing, hermetic design 18
- Basic size drawing, non-hermetic design 22
- Connection list, hermetic design 16
- Connection list, non-hermetic design 20
- Foundation drawing 28
- Installation planning 35
- Lifting instructions 40
- Storage and transportation 33
- Technical data 13

Starting time 14
Stopping time 13
Storage 33

T

Technical data 13
Throughput
- Capacity 13

Tightening torques
- Frame feet 39

Transport 33

V

Vibration level 14

W

Warning signs 11
Weight 13
Worm gear
- Number of teeth 13