2 Safety instructions

2.1 General

Read these safety instructions and this manual carefully before attempting to start, operate or service the decanter.

Failure to comply with these safety instructions and this manual can result in serious injury or death, property damage and/or damage to the decanter.

The decanter must be operated, cleaned, dismantled and/or assembled only by trained personnel who are over the age of 18 and have read and fully understand the instructions in this manual.

2.2 Limitations of Use

- **WARNING**

  The decanter must only be used for separation of the process media stated in the technical specification of the decanter.

- If the decanter is operated with flammable, toxic or hazardous process media, it is the plant operator's responsibility to ensure that the installation and operational procedures take into account all hazards associated with this operation.
- The decanter must not be operated at feed temperatures outside the limits stated in the technical specification for the decanter and marked on the nameplate for the decanter.
- The decanter must not be operated at a speed exceeding the maximum speed stated in the technical specification for the decanter and marked on the nameplate for the decanter.
- The decanter must not be operated at full bowl speed if the density of the compacted wetted solids phase exceeds the value stated on the nameplate of the decanter. If the decanter is used to separate high-density solid matter, the operating speed must be reduced according to separate instructions, which must be obtained from Alfa Laval.

2.3 Potentially Explosive Atmosphere

ATEX decanters comply with the European ATEX directive 94/9/EC and is clearly marked with an Ex plate located next to the decanter name plate.

The Ex plate marking is used to identify the ATEX category of compliance and intended zone of operation. See the table below.

Marking on EX plate	**II 2G IIB b c T3**	**II 3G IIB c T3**
ATEX category	Category 2 - Gas	Category 3 - Gas
Allowed in	Zone 1 and 2	Zone 2

- The ATEX declaration of conformity for the decanter only covers the decanter in the original configuration as delivered from Alfa Laval.
- The user of the decanter must have a formal routine for regular cleaning and visual inspection of the condition of the decanter for faults and leakages. Any build-up of solids in the decanter casing must be removed.
- Maintenance work on the decanter in any zone must under no circumstances be carried out before it is ensured that an explosive atmosphere does not exist at the work place. This must be ensured by the user with a “permission to work” system. The work permit system must also specify when and how the maintenance work can be safely carried out.
- For decanters processing flammable feed it is not allowed to disassembly or remove any of the decanter covers or other parts of the decanter before it is ensured by purging and ventilation that an explosive atmosphere does not exist inside or in the vicinity of the decanter.
- The decanter must not be modified in any way and only correct original spare parts must be used.

⚠ WARNING

A decanter must not be used to separate flammable, toxic, corrosive, or radioactive process media without being designed for such purpose.

2.4 Installation Requirements

- Do not attempt to start the decanter before the decanter has been installed according to the requirements in the installation manual for the decanter and compliance with such requirements has been verified.
- Ensure that piping, funnels and their connections are closed and secured before the decanter is put into operation.
- Ensure that the voltage and frequency of the electrical motors and electrical equipment corresponds to the information given in the technical specification and the labels on the equipment.
- Ensure that the main and back drive motors are rotating in the correct direction. The direction of rotation for the decanter rotor is indicated by arrows on the decanter.
- If drive motors are replaced or reconditioned, check that the voltage and frequency of the reconditioned or new motor corresponds to the data for the original motor as stated in the technical specification.
- Always confirm that the operating bowl speed of the decanter corresponds to the technical specification of the decanter.
- Check all warning and alarm functions of the control system regularly and at least once a year.

2.5 Starting and Operating the Decanter

- Before any instance of starting the decanter, inspect the decanter to confirm that it is in good working condition as specified in this Section.
- Do not start or operate the decanter if damage or severe wear is observed on any of the rotating components, the cover, decanter frame, the electrical components or other critical parts.
- Do not start or operate the decanter if the insulation on the electrical cabling is damaged or if any electrical connections are loose.
- Do not start the decanter before all covers and guards are closed and properly secured according to the instructions.
- Do not start the decanter before connections for feed to the decanter and the outlets from the decanter are closed and secured.
- Do not start or operate the decanter with open outlets, or with outlet openings that are accessible by hand, as process material may leave the decanter at high speed and at high temperature.
- Do not start the decanter with frozen or hard material in the decanter as it can create heavy unbalances.
- Do not operate the decanter with vibration levels exceeding the limit values stated in this manual.
- Do not operate the decanter with bearing temperatures exceeding the temperature limits in this manual.
- Always use hearing protection in proximity to an operating decanter. The sound pressure level at the decanter can exceed the limits for long time exposure 80 dB(A) and short time exposure 85 dB(A).
- Do not operate the decanter at full speed for more than 2 hours without feeding product or flushing with water since this may cause heating of the decanter, and in some cases unforeseen wear to the decanter.
- Always reduce the main speed of the decanter and the differential speed of the decanter if the decanter for practical reasons cannot be completely stopped and will run in idle mode without feed.
- Never start the feed pump or flush the decanter before opening the discharge valves or starting the discharge pumps, including any conveying means for the liquid and solids phases.
- Immediately stop feed flow to the decanter if discharge pumps or conveying means for the liquid and solids phases leaving the decanter are stopped, or any of the outlets from the decanter are blocked

2.6 Stopping the Decanter

- Always stop the decanter using the normal controlled stop and ensure that all solids inside the decanter bowl are scrolled out since this may otherwise create a heavy unbalance when the decanter is next started.
- The use of emergency stop should be limited to emergency situations only..
- If the decanter is stopped as an emergency or by an alarm or power failure, be aware that solids can be present inside the bowl that can create a heavy unbalance at the next start. I can be required to dismantling of the bowl for cleaning before next start.
- Note that due to the high moment of inertia it can take 15 minutes or more before a decanter comes to a complete stand still. Do not open or remove covers before ensuring that the decanter is at a complete stand still, electrically isolated, locked and clearly marked. See Section *Disassembly and Assembly*.

2.7 Maintaining the Decanter

- The instructions for regular maintenance, cleaning and lubrication of the decanter must always be followed.
- The decanter installation must be checked on a regular basis according to the *Maintenance* section of this manual.
- All warning labels on the decanter must be in good condition and replaced if they are damaged.
- The nameplate on the decanter must be in good condition and replaced if it is not legible or is no longer securely attached to the machine.
- All parts of the rotating assembly must be regularly inspected for wear and tear and kept in perfect condition. This includes, but is not limited to, all bowl parts, all bolted connections on the bowl, the gearbox adapter connection and the conveyor. The inspections should occur no less frequently than the intervals set forth in the maintenance tables in this manual. See Section *Maintenance.*
- If visible wear, corrosion or cracks are observed on any of the bowl assembly parts, the decanter shall be stopped immediately and the plant operator shall contact Alfa Laval for maintenance to ensure that the equipment can be operated safely. Inspection for wear and tear is increasingly important the longer that the decanter is in operation.

2.8 Disassembly and Assembly

- Do not attempt disassembly until the decanter has come to a complete stand still, the main power is shut off, and the disconnected main switch is locked with a safety lock.

- Verify with the plant operator whether the decanter or rotating assembly contains process material which can be a health risk, and ensure that any waste can be safely handled and disposed.
- Follow general safety instructions for workshop and use the required personal protection equipment.
- Never work on a hot decanter. Surface temperatures must be below 40°C/ 104°F and all parts must have had enough time to cool down before disassembly is started.
- Use designated lifting tools with the correct lifting capacity for lifting bowl, conveyor, frame and entire decanter.
- Lift all parts from their balance points and ensure that lifting slings cannot slide or move during lifting.
- Slings may be used for short distance lifts in a workshop but general safety rules for slings must be followed and slings must have the correct lifting capacity. Under no circumstances should slings be wrapped around bearing housings or paring disk parts.
- Always use protective gloves and be observant when disassembling the decanter. The decanter parts may have sharp edges due to wear.
- Always use eye protection when removing the gearbox oil plug or opening the gearbox in the event the gearbox has overpressurised.

2.9 Repair

- Major repairs to the decanter must not be made without first consulting Alfa Laval. In no circumstances should weld repairs, or other alterations be made to bowl shells, bowl hubs, gearbox adapter, shafts, or other rotating parts without prior written approval and instructions from Alfa Laval.
- Alfa Laval will not be responsible for any injury to persons or damage to property if genuine parts are not used for the decanter.
- Alfa Laval cannot be held responsible for any injury to persons or damage to property if unauthorized repairs are made to the decanter.
- Interchange of bowl parts may affect balancing condition of the decanter and must only be carried out by specialists from Alfa Laval and with original parts.