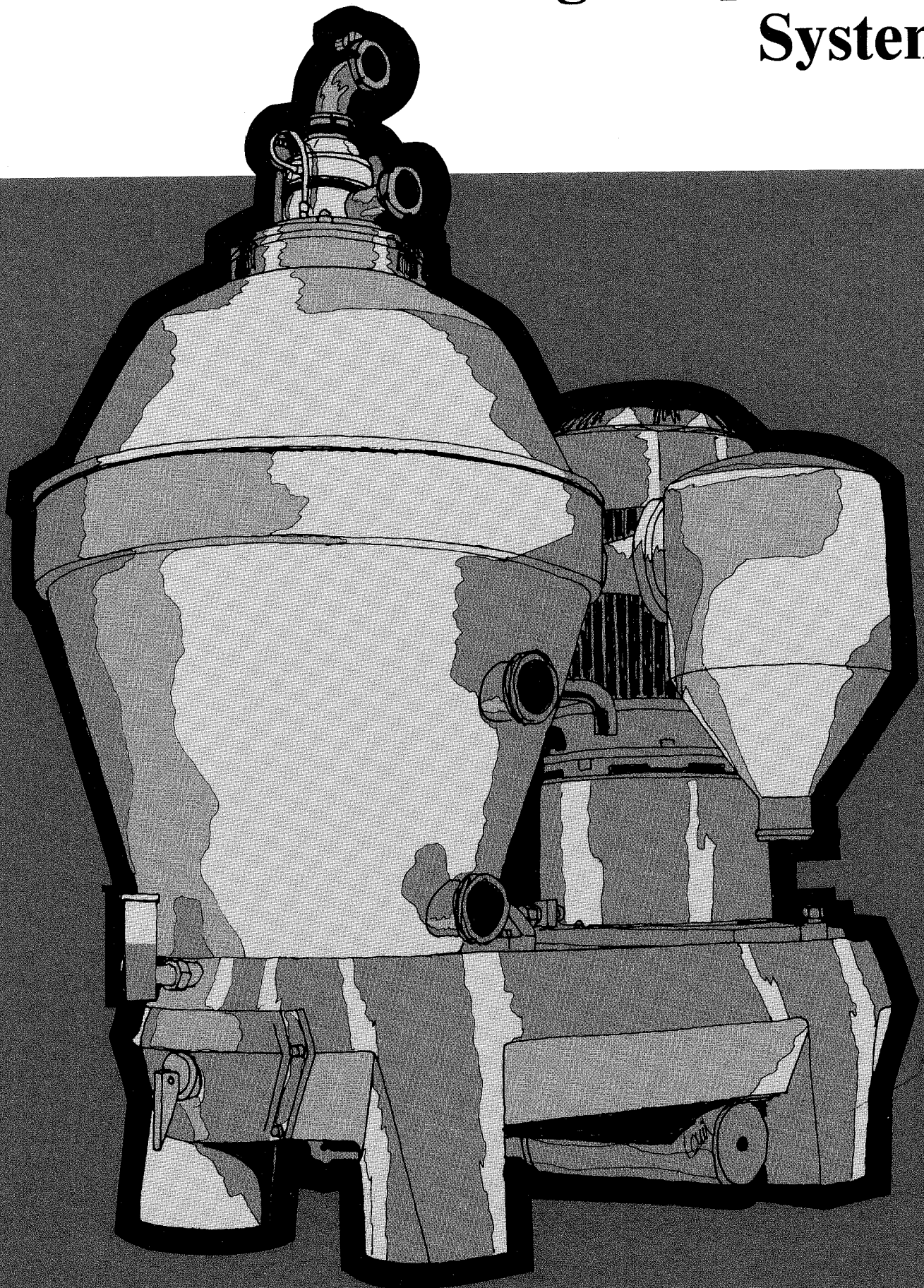


AX 215 Centrifugal Separation System



Application

The AX 215 centrifugal separator system is specially designed for liquid polishing and fine particle harvesting. Typical applications include beverage and sugar processing, liquid polishing and harvesting valuable solids in the pharmaceutical industry.

Available models

Fully hermetic design

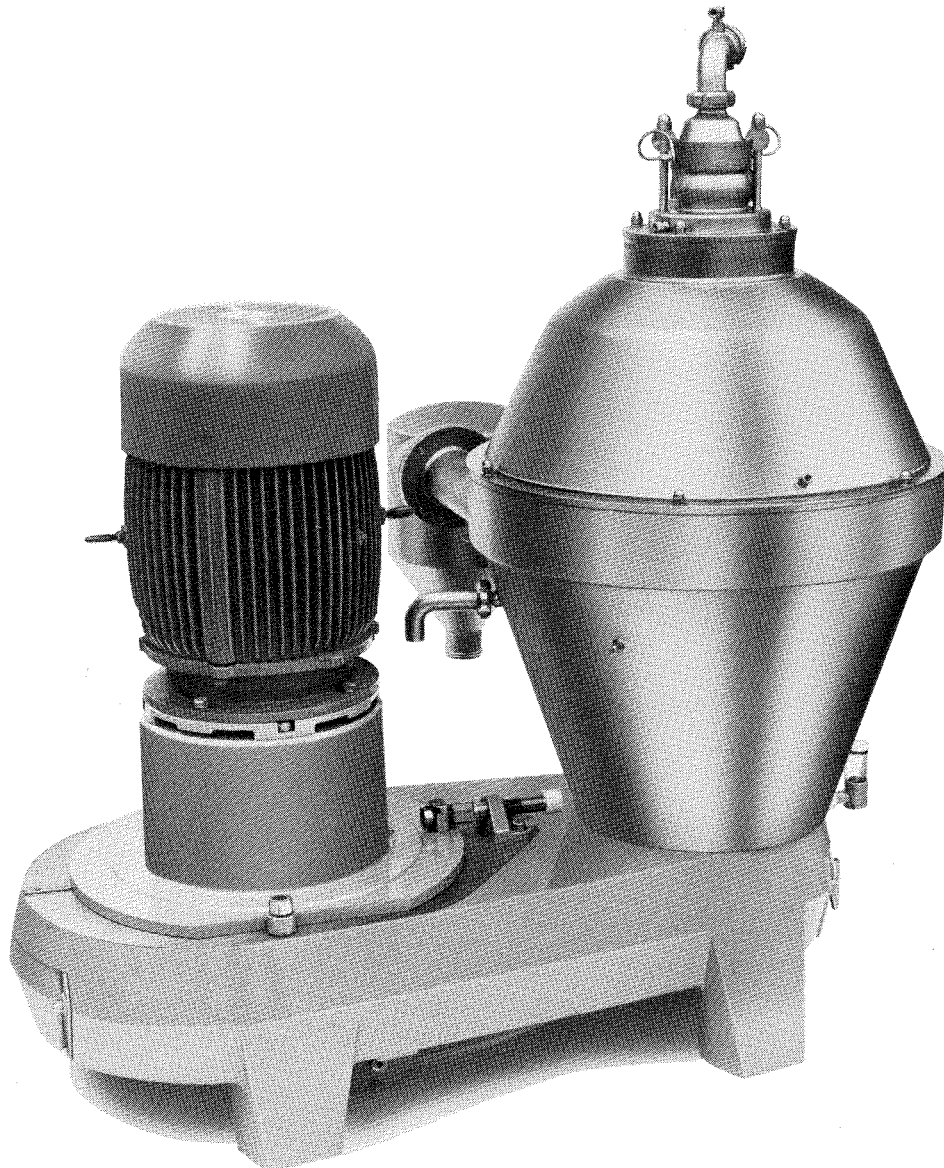
This model can be outfitted for sterilization of the bowl and the space surrounding the bowl.

Paring disc design

This model is equipped with Hydro-hermetic outlet.

Capacity

The maximum throughput for the paring disc version is 43 m³/h and 20 m³/h for the hermetic version. However, actual throughput depends on the amount and type of solids in the feed, temperature, viscosity, etc.



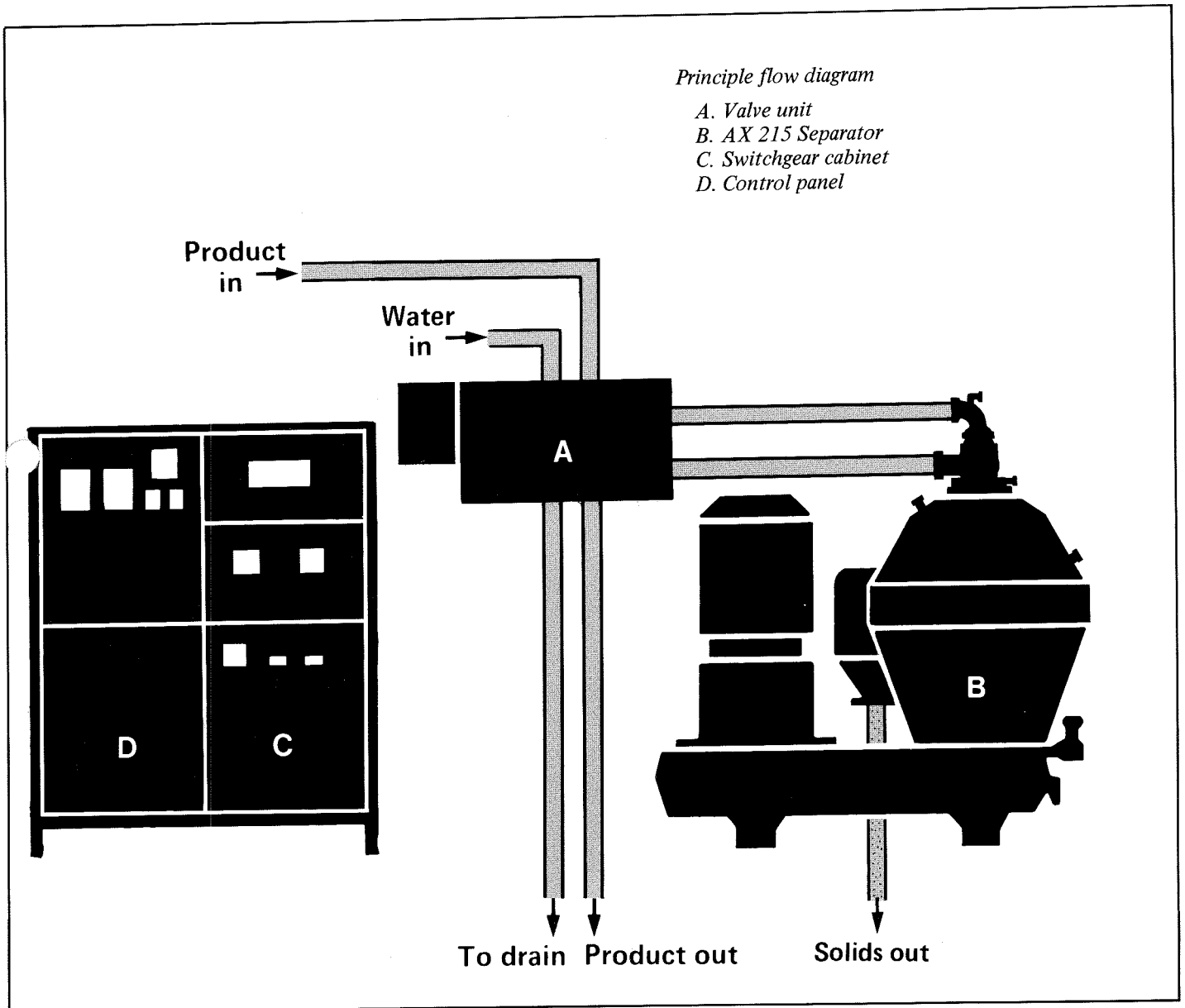
The AX 215 System

The AX 215 separator is delivered as an integral part of a complete pretested separation system, with all ancillary equipment, connecting pipes and cables mounted on a common frame to facilitate installation. In addition to the AX 215 separator the system includes:

- valve unit which connects the system to the process liquid line (also used for *cleaning-in-place*) and supply lines for air and water,
- switchgear cabinet for connection to the power supply,
- control panel with complete instrumentation, monitoring equipment, controls for operation and connections for a cleaning-in-place unit.

The system is characterized by:

- reliable performance ensured by careful engineering and pretesting,
- a high degree of automation with programmed ejections,
- ease of operation with all controls grouped for accessibility on the control panel,
- ease of installation and servicing of all the system's units.



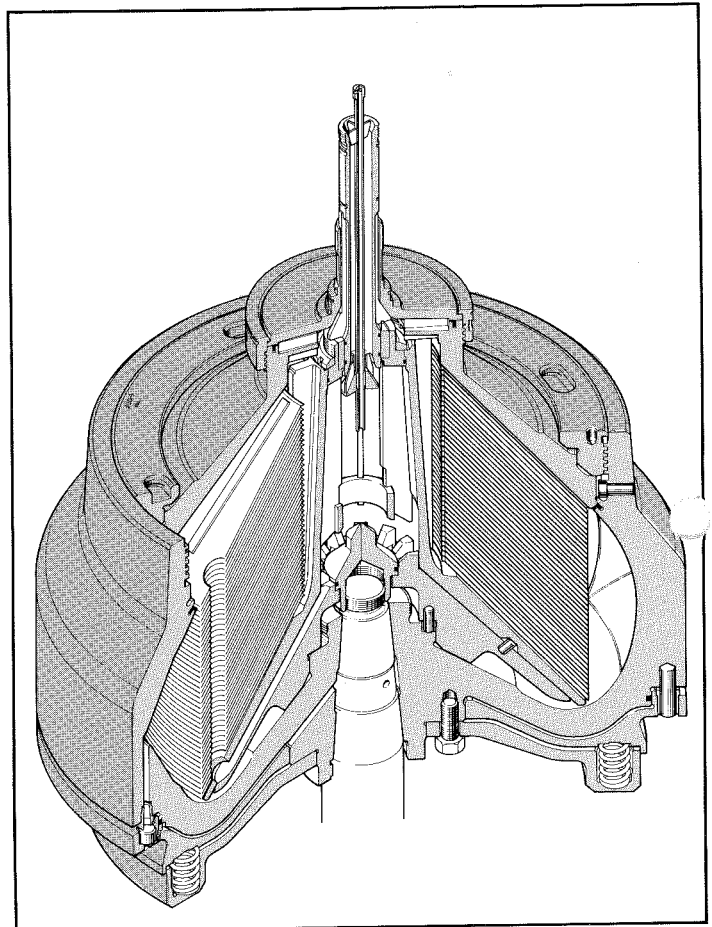
The AX215 Separator

The AX 215 has the following characteristics:

- *High speed and high G-forces*
- *Efficient sludge discharge*
- *Hermetic inlet and outlet, or*
- *Paring disc design*
- *Flat belt drive*
- *Plug-in spindle cartridge*
- *Hood with double jackets for noise reduction and cooling*
- *Sterile operation (optional).*

Efficient separation with high speed and high G-forces

The feed is introduced into the separator bowl through an axial inlet pipe and passes through a distributor into the disc stack where actual separation of the suspended solids takes place. The bowl runs at very high speed, developing a peripheral centrifugal acceleration of over 14,000 gravities. The AX 215 can separate particles down to microscopic determination, around 0.0005 mm in diameter.



Cutaway drawing of AX 215 bowl in hermetic design.

Solid particles are thrown radially outward by the intense centrifugal force field. The particles travel only a very short distance before striking the underside of one of the conical discs. Sedimentation is almost instantaneous.

The particles then slide to the edge of the disc and are thrown into the space outside the disc stack collecting in a number of pockets at the periphery. The clarified liquid rises to the top of the bowl and is continuously discharged under pressure by a built-in pump.

AX215 separator bowl with solids pockets machined out of bowl wall.

Efficient sludge discharge

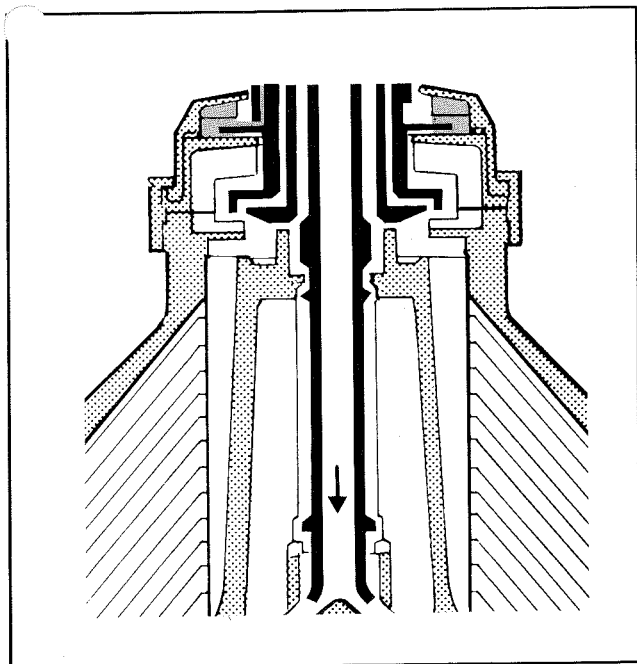
The AX 215 has a system for intermittent ejection of separated solids during operation without interrupting product flow or the separation process.

The solids pockets are machined out of the bowl wall in order to prevent undesirable build-up of separated solids, keeping the interior of the bowl clean at all times. The smooth sides of the pockets are angled to the discharge tubes for fast and reliable ejection.

The axial discharge tubes leading from the peripheral solids pockets terminate in valves which are normally held closed — even when the bowl is at a standstill — by a spring-loaded slide. To eject solids from the bowl during operation, the slide is lowered by a very short injection of compressed air through the hollow bowl spindle. This opens the valves and the solids are discharged into a collecting ring.

With the combination of pneumatic opening action and positive spring-loaded closure, the valves remain open for only 0.10 - 0.15 second, which means that minimum liquid escapes with the solids.

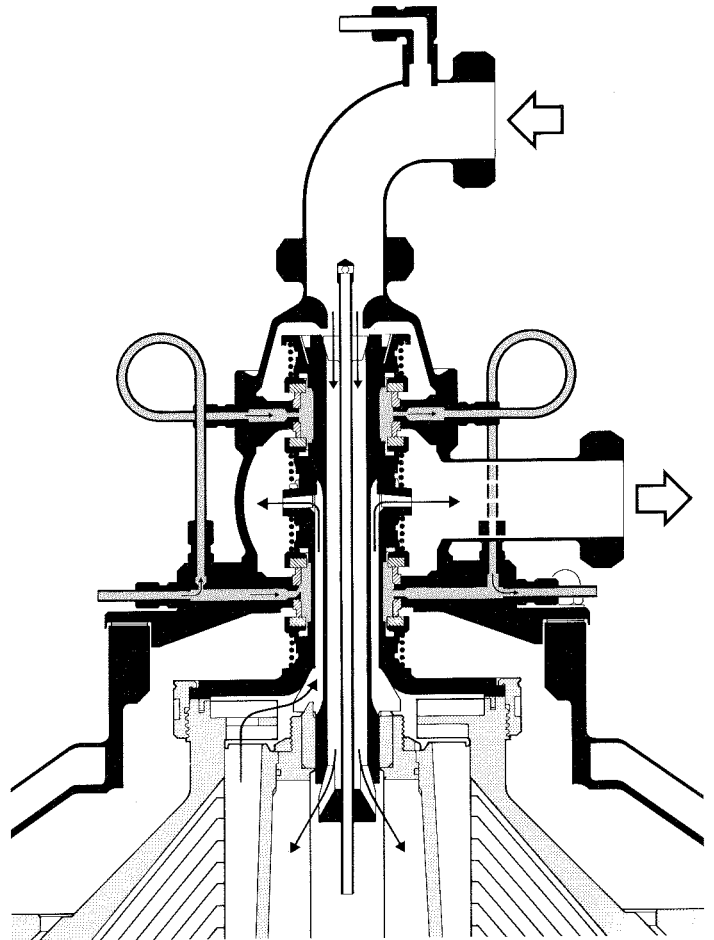
The solids discharge intervals are regulated from the control panel and can thus be adapted to the operating conditions in each individual case.



Paring disc design with liquid seal.

Hermetic inlet and outlet

The process liquid is fed into the separator from the top through an inlet pipe. An axial seal at the top effectively excludes air entrainment into the feed. A positive inlet pressure is required,



The axial seals in the hermetic design are outfitted for cooling (blue).

depending on capacity and outlet pressure. The clarified liquid is brought to the outlet at the top of the bowl under pressure and is discharged by means of a pump. An axial seal prevents air from coming into contact with the clarified liquid.

The axial seals are outfitted for cooling.

Paring disc

In this version, the clarified liquid rises to the top of the bowl and is continuously discharged under pressure by the paring disc, a stationary impeller which utilizes the liquid's own energy of rotation.

Above the paring disc is the Hydro-hermetic seal, which protects the product in the bowl from oxidation and airborne infection, and also serves to prevent escape of dissolved gas from the liquid.

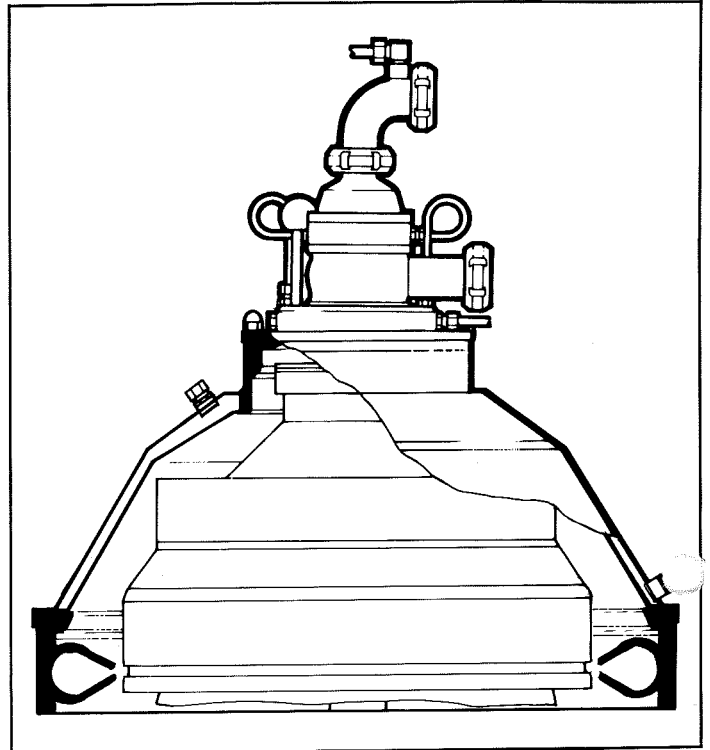
Frame hood with double jackets

The frame hood has a double jacket that reduces the noise level considerably.

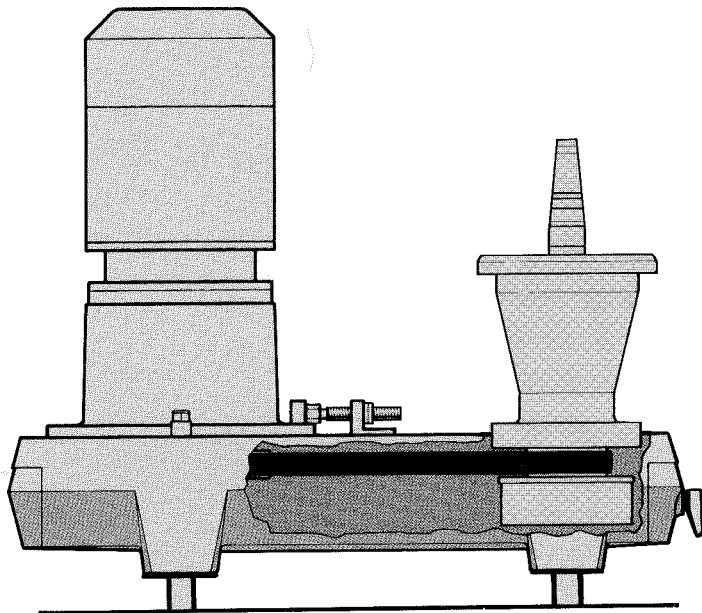
The outer jacket is supplied with connections for cooling water for those cases where the process liquid is sensitive to high temperatures.

Sterile operation (optional)

Where it is necessary to operate under sterile conditions, the machine can be outfitted with a special seal between the bowl and the spindle cartridge so that the bowl and the space surrounding the bowl can be filled with liquid or steam for sterilization.



Double-jacket design reduces noise.



The Unibase frame provides stability and ease of maintenance.

Flat-belt drive

The Alfa-Laval Unibase frame with four vibration-absorbing feet provides a stable and easily installed platform for the separator bowl and motor. Hatches at both ends and external tension adjustment allow easy access for inspection and servicing of the belt transmission. Power from the motor is transmitted to the bowl spindle by a single flat belt running inside the Unibase. This transmission avoids both the tension problems associated with multiple V-belts and the power loss entailed by worm gears. A magnetic clutch ensures smooth start-up and low power consumption.

Plug-in spindle cartridge

The vertical spindle, which supports and drives the separator bowl is designed as a replaceable cartridge unit. The spindle is located in widely spaced top and bottom bearings that are mounted in simple but effective rubber dampers to eliminate vibrations. The oil mist lubrication system is powered by the rotation of the spindle.

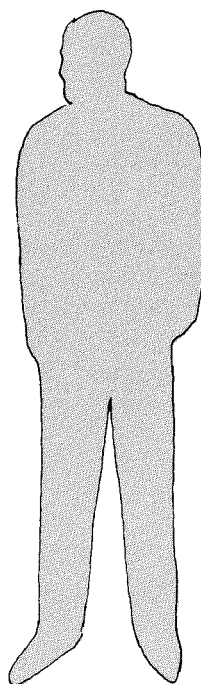
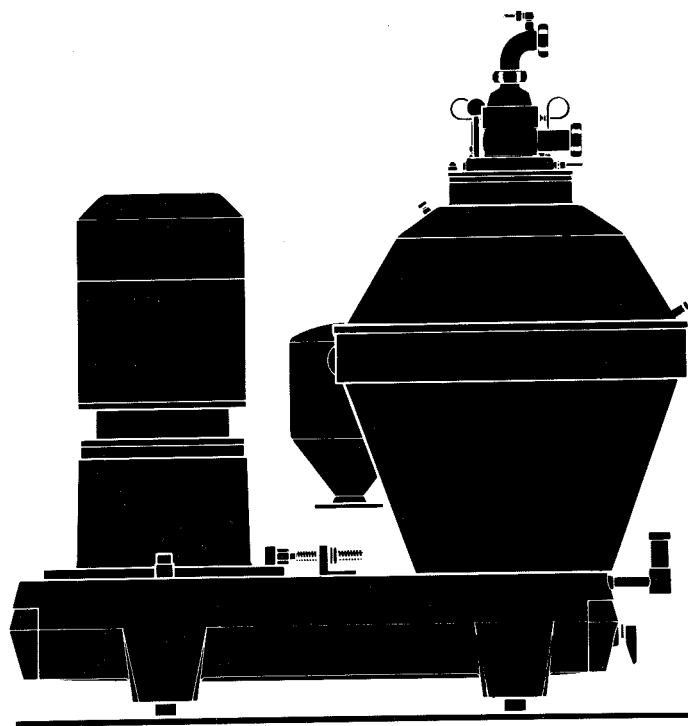
Technical Data

Standard equipment

- Electric motor
- Set of tools
- Set of spare parts

Optional equipment

- Special tool kit for spindle cartridge
- Feed pump
- Solids pump
- Solids tank
- Strainer
- Hydrocyclone



General data

Motor rating	37 kW
Bowl speed	6600 rpm
Starting time	7 min.
Stopping time	27 min.
Solids space	14 liters
Overhead hoist	2.5 m

Dimensions

	Separator	
Length		1695 mm
Height		1800 mm
Width		1205 mm
	Installation module	
Length		1630 mm
Height		2250 mm
Width		1350 mm

Shipping data

	Net weight	Gross weight	Volume
Complete separator with motor, set of tools and spare parts	2100	2450	8.0 m ³
Installation module	1000	1500	9.2 m ³

Material

All liquid-wetted parts in the bowl, inlet and outlet are of molybdenum-alloy stainless steel; the frame hood is of stainless steel and the frame of epoxy-enamelled cast iron.

All liquid-wetted parts of the valve unit are made of stainless steel.

Installation Module

All ancillary equipment for the AX 215 Separator is mounted on a common frame. This factory-tested installation module will reduce installation time to a minimum. The modular concept allows for many layout variations of the installation to suit local conditions.

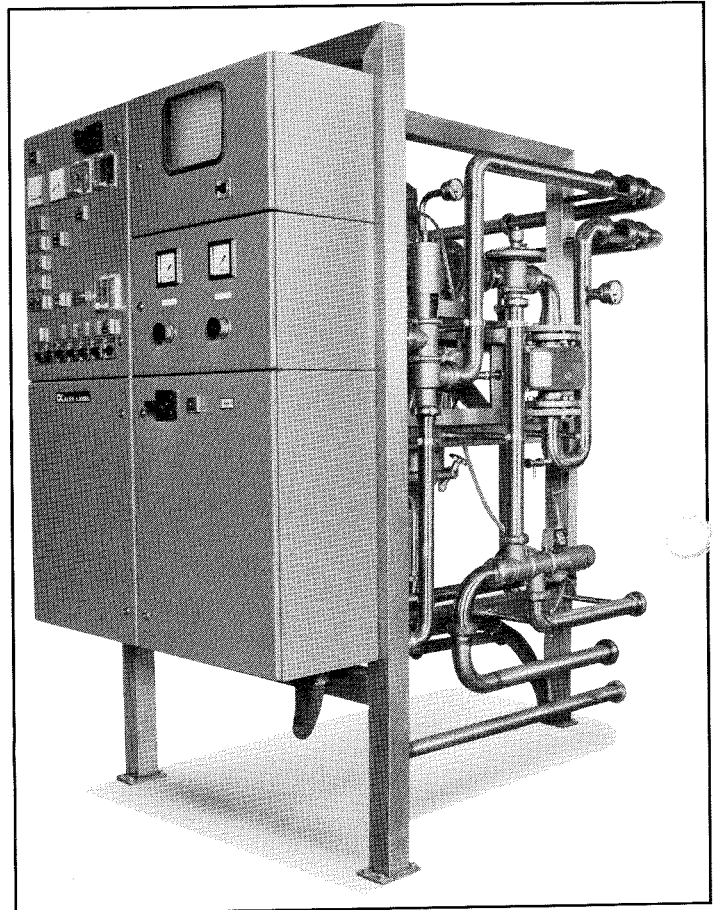
Valve unit

The valve unit contains

- Sight glasses for inlet and outlet
- Sampling cocks for inlet and outlet
- Manometers for inlet and outlet
- Manual regulating valve for flow control
- Pressure gauge for process water
- Change-over valve for process liquid and process water
- Flow meter with limit switch for a low flow
- Constant pressure modulating valve
- Change-over valve for separated liquid to tank or drain
- Solenoid valves for liquid seal and flushing

Control panel

The control panel is provided with complete instrumentation and monitoring equipment with control and alarm functions for the entire separation system. The panel can also be connected to a cleaning-in-place station.



Switch-gear unit

The switch-gear cabinet contains motor overload protection, contactors and relays, all according to international safety regulations.