# Alfa Laval MBUX 214

## Solids discharging nozzle centrifuge

Alfa Laval MBUX 214 centrifuge is used for recovery of micro-organisms and cell debris in high density fermentations.

**Application**
The solids discharging nozzle centrifuge type MBUX 214 is designed specially for separation of microorganisms from high density fermentation broths.

The centrifuge is used to separate, wash and concentrate microorganisms with normal particle size in the range 1 - 5 µm. The content of the suspended solids in the feed is normally in the range 2 - 7,5% DS.

**Design features**
With the patented Alfa Laval self regulating vortex nozzles the concentration of discharged solids phase can be kept at a high and even level irrespective of fluctuations in the feed flow or feed concentration. The centrifuge can thus be operated closer to the clogging point without increasing the risk of clogging.

The disc inlet ensures a lenient acceleration of shear sensitive microorganisms.

The light and heavy phases are both discharged under pressure which prevents foaming and simplifies installation by eliminating pump systems and improves hygiene.

Solids pockets in the bowl guide the solids to the concentrate tubes, preventing accumulation of firmly packed solids and making separation and CIP easier and more effective.

Frame hood and solids receptacles are jacketed for circulation of cooling water, which also reduce the noise level. Frame hood and solids receptables are fitted with spray nozzles for washing the outside of the bowl.

The Control Panel (optional) handles the control and supervision of the MBUX 214 centrifuge including a cleaning-in-place (CIP) mode.

Alfa Laval MBUX 214

**Standard design**
All liquid-wetted parts are made in high-grade stainless steel except the rubber gaskets (EPDM). The bearings are lubricated by an external lubrication circuit. The vertical driving device and bowl spindle is designed as an easily serviced unit. The entire assembly lifts out in one piece. The centrifuge is equipped with sensors for monitoring of bowl speed and vibration level.
Standard motor 55/75/90 kW for frequency converter drive, or control torque motor 75/90 kW.

## Operating principle

The feed containing the liquid and the solids is introduced to the rotating centrifuge bowl (fig 1) from the top via a stationary inlet pipe (1), and is accelerated in a distributor (2) with disc inlet before entering the disc stack (3). It is between the discs that the separation takes place.

The liquid phase moves through the disc stack towards the centre of the bowl, from where it is pumped out under pressure by means of a built-in paring disc (4). The heavy solids phase is moved outwards by centrifugal force to the solids pockets at the bowl periphery and from there through concentrate tubes (5) and internal vortex nozzles (6) into the paring tube chamber, where the concentrate is skimmed off by the paring tube (7) and discharged under pressure.

The bowl can be opened intermittently during production and/or the cleaning cycle for ejections of solids while the machine continues to run at full speed. The pneumatically (8) controlled valve slide (9) under the bowl bottom opens the discharge valves (10) momentarily, permitting the ejections of solids.

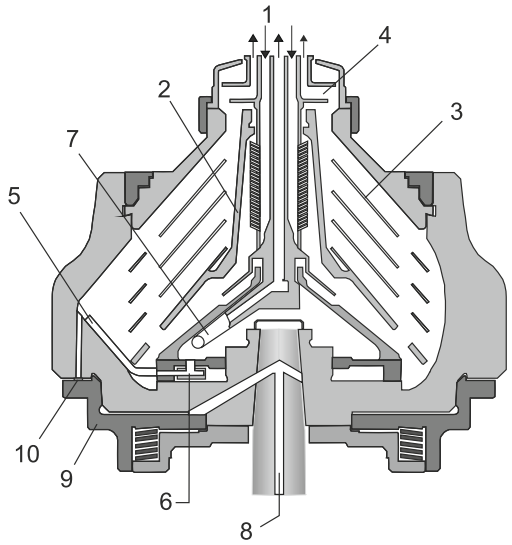



Fig. 1 Typical bowl drawing for a vortex nozzle centrifuge. Drawing details do not necessarily correspond to the centrifuge described.

### Shipping data (approximate)

| | |
|---|---|
| Centrifuge weight, without motor | 2785 kg (6140 lbs) |
| Motor weight | 420-725 kg (926-1598 lbs) |
| Gross weight, max | 3800 kg (8378 lbs) |
| Volume | 8.0 $m^3$ |

Alfa Laval reserves the right to change specifications without prior notification.

## Technical data

### Utilities consumption

| | |
|---|---|
| Electric power | Max 90 kW [1] |
| Operating air | 25 Nl /discharge [2] |
| Safety water | 10 - 30 $m^3$/h [3] |
| Flushing liquid | 0 - 15 l/discharge [4] |
| Cooling liquid | 500 l/h [5] |

[1] Actual consumption depends on exact throughput capacity, centrifugate & concentrate flow rate and applied back pressure.

[2] Instrument quality, 500-600 kPa. Actual consumption depends on CIP-discharge frequency.

[3] The bowl should be filled with liquid at start, stop and normal operation. In case process liquid is not available, safety water should be used. Minimum flow shall be 10% above nozzle flow.

[4] 100 - 600 kPa, 300 kPa suggested. Momentary flow rate at suggested pressure up to 800 l/h. Used only during CIP.

[5] Data valid for 50 kPa. Max. pressure 100 kPa.

### Technical specification

| | |
|---|---|
| Max. throughput capacity | 30 $m^3$/h [1] |
| Max. nozzle flow | 22 $m^3$/h [2] |
| Feed temperature range | 0 - 100 °C |
| Feed inlet pressure required | Max. 15 kPa [3] |
| Centrifugate outlet pressure available | 100 kPa [4] |
| Concentrate outlet pressure available | 550 kPa |
| Installed motor power | 55/75/90 kW |
| Noise level | 78,5 dB(A) |

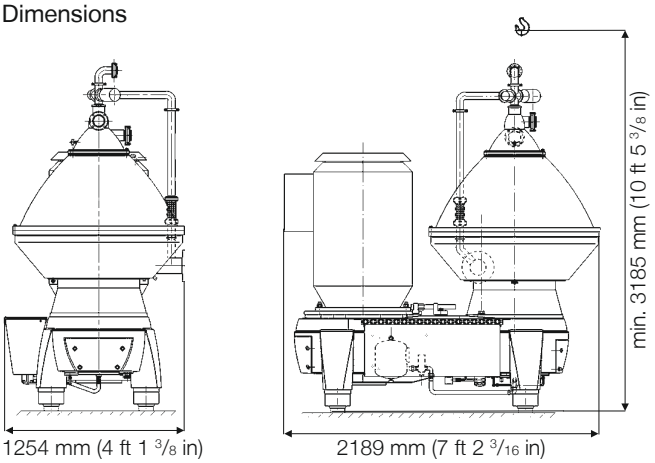
[1] Actual consumption depends on exact throughput capacity, centrifugate & concentrate flowrate and applied back pressure.

[2] Wet solids.

[3] Data valid for water at feed flowrates up to 30 $m^3$/h and outlet pressure 400 kPa.

[4] Data valid for a centrifugate flowrate flow of 26 $m^3$/h.

### Dimensions




How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com



PCHS00139EN 1510