



Alfa Laval Clara 20

Disc stack separation system for food and beverage applications

Introduction

For more than 100 years, Alfa Laval has been supplying separators for various industries. Today, Alfa Laval has the most complete and diverse offering of separators – each fully optimized for its specific duty and supplied with all auxiliary systems and key components.

The use of disc stack separators in different food and beverage applications goes back several decades. Based on the long-term cooperation with the food and beverage industry, Alfa Laval separators are specifically designed for the requirements and demands of this industry.

The Clara range of high-speed separators is specially developed for food, beverage and industrial fermentation applications. The Clara range offers gentle product treatment, high separation efficiency and low power consumption.

Application

The Alfa Laval Clara systems are designed for general use in the food and beverage industries and other hygienic applications. The Clara 20 is designed for clarification duties with high performance and maximized yield.

Typical separation applications are clarification of the following products:

- Wine
- Fruit juices
- Vegetable juices

Benefits

- High separation efficiency
- Gentle treatment of the product
- Robust and reliable design
- Easy to operate

Design

The Clara 20 separation system consists of a separator, a process & service liquid unit, and an electrical & control system.

It has a clarifier type of bowl with a conventional top-fed design.

All components are skid mounted to facilitate “Plug and Play” installation, which results in a small footprint. It can be



configured from a selection of basic and other optional standardized units and control functions.

All metallic parts in contact with the process liquid are made of stainless steel. Gaskets and seals in contact with the product are made of FDA approved materials and are approved according to food regulations (EC-1935/2004).

The separation system is designed for completely automated cleaning-in-place (CIP).

Scope of supply

The standard Clara 20 skid mounted system includes the following main components:

- Disc stack separator
- Process & service liquid unit:
 - Valves, instruments and other components
 - Flow meter
 - Sight glasses
 - Sample valves
 - Timer triggered solids discharge function
- Electrical & control system:
 - Control cabinet with PLC and HMI
 - Motor starter cabinet with VFD
- Commissioning spares
- Set of special tools

- Documentation
- The system is available in following versions:
 - Clarifier
 - High Flow
 - Low Flow
 - Concentrator
 - High Flow
 - Low Flow
 - Purifier
 - High Flow
 - Low Flow

Options

- Feed pump
- Solids receiving unit (a collection device and a transfer pump for discharged solids)
- Turbidity triggered solids discharge function
- Service options:
 - Commissioning
 - Operators training (basic and advanced level)
 - Basic service agreement
 - Performance agreement

Working principle

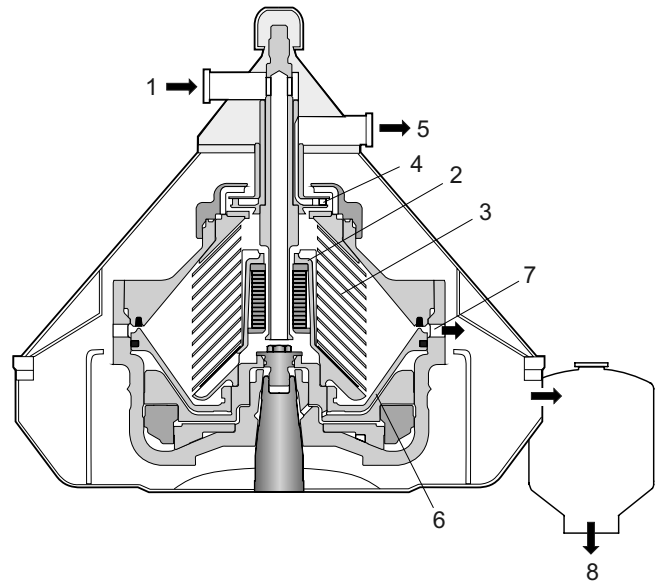
The process & service liquid unit monitors and regulates the flow and pressure of the feed and utilities liquids in and out of the separator.

The feed enters the separator bowl from the top. Separation takes place between the bowl discs as a result of the centrifugal force that causes the solids to move towards the periphery.

The clarified/separated liquid is continuously pumped out of the bowl through the outlet at the top of the separator.

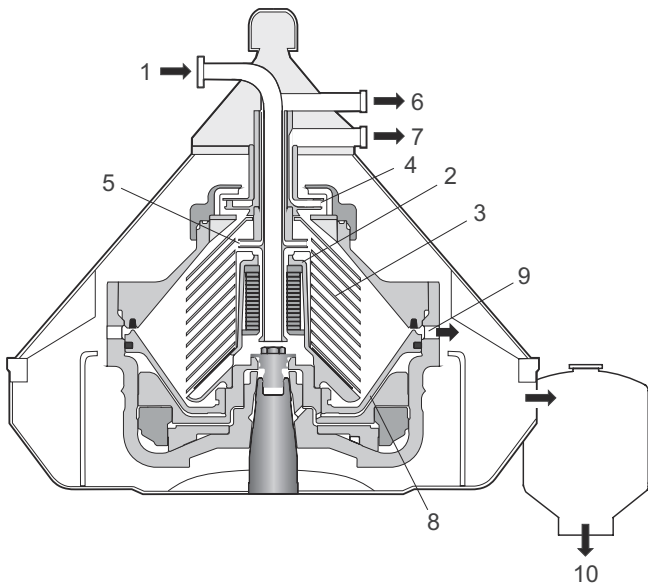
The solids collected in the periphery of the bowl are discharged intermittently through the discharge ports. The discharge is triggered by a timer or by an optional turbidity meter mounted on the clarified product outlet pipe. Water is used to control the movement of the sliding bowl bottom part that opens and closes the discharge ports. The discharged solids decelerate in the sludge cyclone and can be pumped out of the system by the optional solids receiving unit.

The process & service liquid unit also controls the separator’s discharge system, flushing, and CIP.



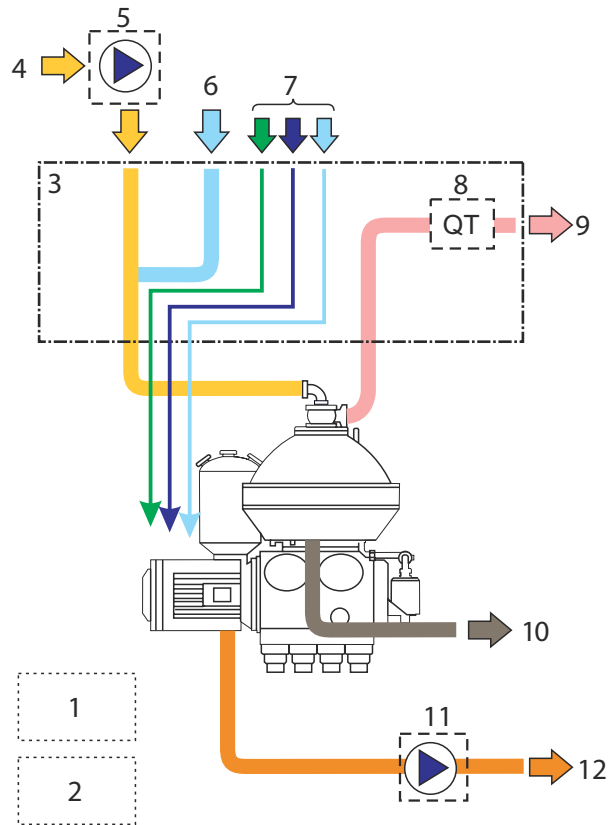
Typical bowl drawing for a solids-ejecting separator. The details illustrated do not necessarily correspond to the separator described. Clarifier

1. Feed inlet
2. Distributor
3. Disc stack
4. Paring disc
5. Liquid phase outlet
6. Sliding bowl bottom
7. Solids discharge ports
8. Solids outlet from cyclone



Typical bowl drawing for a solids-ejecting separator. The details illustrated do not necessarily correspond to the separator described.
Concentrator and Purifier

1. Feed inlet
2. Distributor
3. Disc stack
4. Paring disc
5. Heavy phase paring disc
6. Light liquid paring disc
7. Light liquid phase outlet
8. Sliding bowl bottom
9. Solids ports
10. Solids outlet from cyclone



Typical flow chart of a separator system. The details may differ slightly between different systems.

1. Control cabinet
2. Main motor starter cabinet and VFD
3. Process & service liquid unit
4. Product inlet
5. Feed pump (optional)
6. Standby water
7. Utilities
8. Turbidity meter for solids discharge (optional)
9. Clarified product outlet
10. Separator drain
11. Solids receiving unit (optional)
12. Discharged solids outlet

Technical data

All technical data is based on Clara 20 Clar High Flow model

Performance data¹

Maximum capacity	High flow: 4 000 litre/h (35 US gpm) Low flow: 500 litre/h (2.2 US gpm)
Maximum motor power	3.7 kW (4.9 HP)

¹ Actual capacity and power consumption depend on operating conditions.

Connections

Feed inlet	DIN 32676 Clamp ferrule DN25
Product outlet	DIN 32676 Clamp ferrule DN25
Solids outlet	Clamp ferrule OD 63.5 ISO 2852

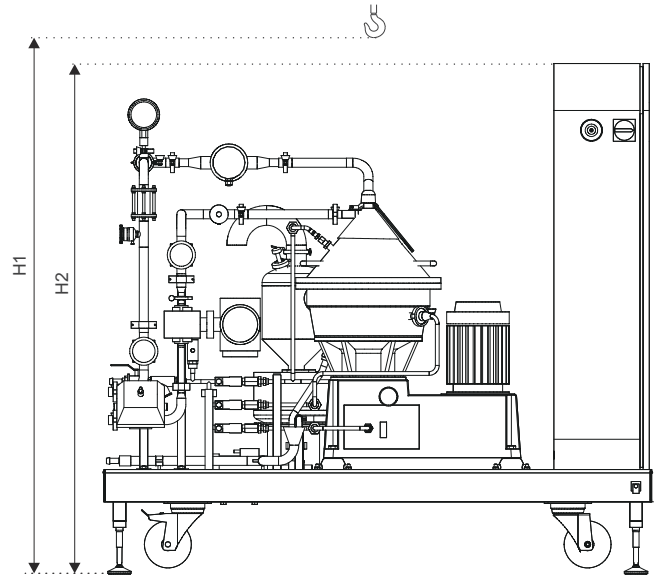
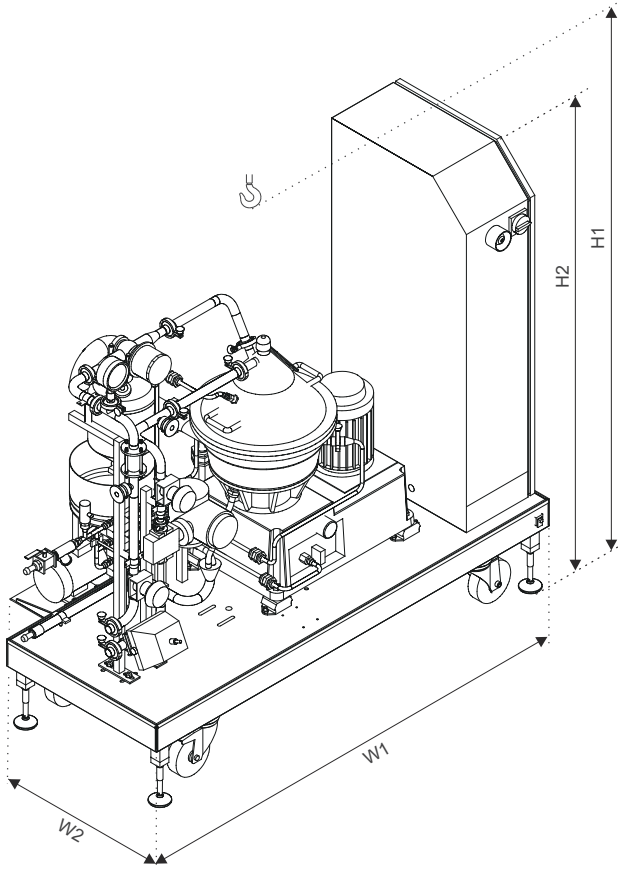
Material data

Bowl body	Duplex stainless steel, EN 1.4462, ASTM/UNS S31803
Frame top part	Stainless steel 316, EN 1.4401, ASTM S31600
Gaskets (product wetted)	NBR and EPDM, FDA approved materials
Piping	Stainless steel, AISI 316L
Frame and cabinets	Stainless steel, AISI 304

Weights

Module incl. separator, bowl and motor	375 kg (827 lbs)
Bowl	37 kg (82 lbs)

Dimensional drawing



Dimensions

H1 (minimum lifting height)	1100 mm (3 ft 7 5/16 inch)
H2	1630 mm (5 ft 4 3/16 inch)
W1	1750 mm (5 ft 8 7/8 inch)
W2	945 mm (3 ft 1 1/5 inch)

This document and its contents are subject to copyrights and other intellectual property rights owned by Alfa Laval Corporate AB. No part of this document may be copied, re-produced or transmitted in any form or by any means, or for any purpose, without Alfa Laval Corporate AB's prior express written permission. Information and services provided in this document are made as a benefit and service to the user, and no representations or warranties are made about the accuracy or suitability of this information and these services for any purpose. All rights are reserved.

200001064-4-EN-GB

© Alfa Laval Corporate AB

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