

CE 286

Nutsche pressure filter



Learning objectives/experiments

- basic principle and method of operation of a Nutsche pressure filter
- fundamentals of cake filtration: Darcy's equation
- mass and thickness of filter cake dependent on filtrate quantity

Specification

- [1] Nutsche pressure filter for discontinuous cake filtration
- [2] enclosed 3-part vessel with 2 flanges and 2 bumped bases
- [3] bottom flange with recessed sieve base and PP filter cloth
- [4] bottom section of vessel to collect filtrate
- [5] centre section to form filter cake
- [6] top section removable to remove filter cake
- [7] maintenance and pressure control unit to adjust positive pressure in centre and top section
- [8] safety valve in the top section
- [9] 2 manometers to indicate pressure upstream and downstream of filter
- [10] 2 sight glasses to observe level in bottom section
- [11] production and transport of suspension with suspension production unit CE 285

Technical data

Vessel

- inner diameter: approx. 300mm
 - capacity: approx. 75L
 - permissible pressure: 0,6bar
 - material: stainless steel
- Pressure controller: setting range: 0,2...3bar
 Safety valve: response pressure 0,6 bar

Measuring ranges

- pressure: 2x 0...1 bar
- pressure: 1x 0,2...3bar

LxWxH: 850x860x1890mm

Weight: approx. 120kg

Required for operation

compressed air connection: 3bar, water connection, drain

Scope of delivery

trainer, 1 set of accessories, 1 set of instructional material

Description

■ cake filtration with a Nutsche pressure filter

Nutsche filters are used for discontinuous cake filtration of suspensions with high solid concentrations.

The suspension production unit CE 285 produces a suspension of diatomite and water and delivers it from above into the Nutsche filter of CE 286. In the bottom flange of the Nutsche filter is a recessed sieve base with a filter cloth. A growing filter cake accumulates on the filter cloth made from the separated solid material. The applied positive pressure in the top section of the Nutsche filter pushes the filtrate through the filter cake and the filter cloth.

It is collected in the bottom section of the tank. After filtering, the filter cake obtained is washed with a washing liquid (water) and is then dried by an air flow.

A maintenance and pressure control unit for adjusting the overpressure in the centre and top sections and a safety valve complete the system.

CE 286

Nutsche pressure filter

Required accessories

CE 285 Suspension production unit