

# CE 286

## Nutsche pressure filter



### 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. 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.

### 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] 2 manometers to indicate pressure upstream and downstream of filter
- [9] 2 sight glasses to observe level in bottom section
- [10] production and transport of suspension with suspension production unit CE 285

### Technical data

#### Vessel

- inner diameter: approx. 300mm
- capacity: approx. 75L
- permissible pressure: -1...10bar
- permissible temperature: -10...100°C
- material: stainless steel

#### Measuring ranges

- manometer:
  - ▶ 2x 0...4bar (D=160mm)
  - ▶ 1x 0,5...8,5bar

LxWxH: 600x900x1900mm

Weight: approx. 120kg

### Required for operation

Compressed air connection: 10bar, water connection

### Scope of delivery

- 1 Nutsche pressure filter
- 1 filter cloth
- 1 set of instructional material

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Required accessories

083.28500      CE 285      Suspension production unit