

# Laboratory and Pilot Centrifuges, Filters and Dryers





## Vertical Centrifuges

V 200 TP – V 400 TP

The vertical centrifuges Type V 200 TP, V 300 TP, V 400 TP, have been designed for basic tests of centrifugal separation technology.

### Customer benefits:

- Mobile design with small foot print
- Easy installation; "plug and use"
- Ideal for scale-up
- Simplest handling
- CIP cleaning
- Installation in isolator housing/glove box possible

### Standard specification:

Bowl diameter	200–400 mm
Filter surface	0.062–0.31 m <sup>2</sup>
Nominal volume	1.5–16 liter
Maximum load	2.0–20 kg
Max. centrifugal force	900–2055
Material	1.4571 or 2.4602 (Alloy C22)
Surfaces in contact with product	Ra <0.8 µm

### Standard configuration:

- Housing
- Base frame with bearing
- Sieve drum with removable collar
- Feed pipe
- Washing pipe
- Sight and light glass
- Control
- Variable speed drive

### Options:

- Mobile design
- ATEX execution
- CIP cleaning
- Heating and cooling jacket
- Electro-polished surfaces
- Several types of bowls (see fig. page 6)
- Filtrate reservoir
- Can be integrated in isolator/glovebox
- Further special equipment on request



## Pilot Plant Centrifuges

H 250 P – H 500 P, HF 300, F I

The HEINKEL Inverting Filter Centrifuge, type F and HF, and the Horizontal Peeler Centrifuge, types H 250 P, H 320 P and H 500 P, are especially designed for demanding laboratory and test operations as well as production of small quantities.

### Customer benefits:

- Small foot print
- Easy installation; "plug and use"
- Ideal for scale-up
- Fully automated operation
- cGMP conformity

### Standard specification:

Bowl diameter	200–500 mm
Filter surface	0.098–0.39 m <sup>2</sup>
Nominal volume	2.5–20 liter
Maximum load	3.1–25 kg
Max. centrifugal force	1500–2020
Material	1.4571 or 2.4602 (Alloy C22)
Surfaces in contact with product	Ra <0.8 µm

### Standard configuration:

- Housing
- Base frame with bearing
- Sieve drum
- Feedpipe
- Washing pipe
- Discharging system
- Sight and light glass
- Control
- Variable speed drive

### Options:

- Mobile design
- ATEX execution
- CIP cleaning
- Clean room separation
- Electro-polished surfaces
- Filtrate reservoir
- Filling systems
- PAC system (inverting filter centrifuge)
- Removal of residual heel (peeler centrifuge)
- Further special equipment on request



## Lab Dryer and Mixer BS-miniDry®

The BS-miniDRY® has specifically been designed for research and development with small amount of product. Tailor made for the requirements in the laboratory, it can be installed in a ventilation booth and be operated under many process conditions.

### Customer benefits of the Lab Dryer with 0.15 to 1.5 liter nominal volume:

- Flexible working volume from 10% to 100% of nominal volume
- Mobile and compact design
- Easy "plug and use" installation
- Excellent for scale-up
- Easy to operate
- CIP cleaning
- Installation in ventilation booth

### Standard specification:

Material	1.4404 (SS316L) or 2.4602( Alloy C22)
Working volume	Type DKL015: 0.15–1.5 liter
Working pressure	–1.0 – 0.5 barg
Working temp.	–20 – 120°C
Heating/cooling	Water/thermal oil at 0–6 barg
Surfaces in contact with product	Ra <0,8 µm

### Standard configuration:

- Heating/cooling jacket
- Insulation jacket
- Dust filter
- Two drives with variable speeds
- Manual ball discharge valve
- Pressure and temperature sensors
- Manual sampler
- Height adjustable support frame

### Options:

- Hybrid stirrer with central shaft mixer
- Vacuum system with solvent recovery
- Heating/cooling system
- SPS control with lab software
- Operation via PC or laptop
- Free programmable process control
- ATEX configuration
- Additional options are available



## Pilot Dryer and Mixer BS-pilotDry®

For processes in pilot plants and small scale production, the BS-pilotDRY® has been designed. It can easily be moved from one place to another and is fully equipped with the necessary instrumentation.

### Customer benefits of the Pilot Dryer with 10, 30 and 50 liter nominal volume:

- Flexible working volume from 10% to 100% of nominal volume
- Mobile and compact design
- Easy "plug and use" installation
- Ideal for scale-up
- Easy to operate
- CIP cleaning

### Standard specification:

Material	1.4404 (SS316L) or 2.4602( Alloy C22)
Working volume	Type DKL015–ML005: 10–15 liter
Working pressure	–1.0 – 3.0 barg
Working temp.	–20 – 120°C
Heating/cooling	Water/thermal oil at 0–6 barg
Surfaces in contact with product	Ra <0,8 µm

### Standard configuration:

- Heating/cooling jacket
- Insulation jacket
- Dust filter
- Two drives with variable speeds
- Manual ball discharge valve
- Pressure and temperature sensors
- Manual sampler
- Height adjustable support frame

### Options:

- Hybrid stirrer with central shaft mixer
- Vacuum system with solvent recovery
- Heating/cooling system
- SPS control with lab software
- Operation via PC or laptop
- Free programmable process control
- ATEX configuration
- Additional options are available



## Pilot Paddle Dryer Pharmadry® PHI00

**For processes in pilot plants and small scale production, the Pharmadry® has been designed. It can easily be moved from one place to another and is fully equipped with the necessary instrumentation.**

**Customer benefits of the Pilot Dryer with 90 liter nominal volume:**

- Mobile and compact design
- Easy "plug and use" installation
- Ideal for scale-up
- Easy to operate
- CIP cleaning

**Standard specification:**

Material	1.4404 (SS316L) or 2.4602(Alloy C22)
Heated area	1.3 m <sup>2</sup>
Usable volume	90 liter
Working pressure	-1 – 2 barg
Agitator RPM	3 – 35 UPM
Agitator drive	4.0 kW
Surfaces in contact with product	Ra 0.38µm

**Standard configuration:**

- Heating/cooling jacket
- Insulation jacket
- Dust filter
- Drives with variable speeds
- Manual ball discharge valve
- Pressure and temperature sensors
- Manual sampler

**Options:**

- Vacuum system with solvent recovery
- Heating/cooling system
- SPS control with lab software
- Operation via PC or laptop
- Free programmable process control
- ATEX configuration
- Additional options are available



## Labor PF/TD Filter Dryer – Pan Dryer Pressofiltro® PF/TD 5 – PF/TD 100

**For processes in pilot plants and small scale production, Filter/Filter dryer has been designed. It can easily be moved from one place to another and is fully equipped with the necessary instrumentation.**

**Customer benefits of the Pilot Dryer with 10, 30 and 50 liter nominal volume:**

- Easy "plug and use" installation
- Ideal for scale-up
- Easy to operate
- CIP cleaning

**Standard specification:**

Filter area	0.03 – 0.2 m <sup>2</sup>
Usable slurry volume	0.6 – 80 liter
Usable cake volume	0.2 – 25 liter
Agitator rotation speed	15 – 70 min <sup>-1</sup>
Agitator drive	1.1 – 4,0 kW
Agitator stroke	200 – 300 mm
Working pressure	-1 – 2 barg
Working temperature	-10 – +135°C
Surfaces in contact with product	Ra 0.4 µm

**Standard configuration:**

- In accordance with PED 97/23/EC or/and ASME
- cGMP and FDA guide-lines
- ATEX Group II 2 G/D (Zone 1/21) environments
- Suitable for use as a vacuum dryer, filter dryer or agitated nutsche filter
- Shaft sealing with stuffing box
- Unit mounted on wheeled trolley
- Explosion proof control panel (EEx-d)

**Optionen:**

- Multilayer filter elements
- PLC based controls
- Other special versions available on request



## Pilot Units

### Pressofiltro® PF 5 – PF 500

**For processes in pilot plants and small scale production, the Pharmadry® has been designed. It can easily be moved from one place to another and is fully equipped with the necessary instrumentation.**

**Customer benefits of the Pilot Filter with filter area from 0.03–0.7 m<sup>2</sup>:**

- Mobile and compact design
- Easy "plug and use" installation
- Ideal for scale-up
- Easy to operate
- CIP cleaning



#### Standard specification:

Filter area	0,03–0,7 m <sup>2</sup>
Internal diameter	200–955 mm
Usable slurry volume	8–640 liter
Usable cake volume	3–210 liter
Bottom opening stroke	120–500 mm
Heated area	0,0–1,04 m <sup>2</sup>
Agitator RPM	10–100
	5–46 min <sup>-1</sup>
Agitator drive	0,75–7,5 kW
Working pressure	–1 – 4 barü
Working temperature	–10 – +150°C

#### Standard specification for pilot units:

- Calculation, design and manufacture in accordance with PED 97/23/EC or/and ASME pressure vesselcode, Section VIII with U-Stamp as well as in compliance with cGMP and FDA guidelines.
- EC type examination certificate 03ATEX0246X per the 94/9/EC directive or with electrical componentsUL approved for operation in a Class I, Division I or 2, Groups C & D environment.
- Double mechanical seals, externally interchangeable, dry running contacting or non contacting lift-off type seals as well as liquid lubricated seals.
- Vessel base column mounted for excellent access to the filter plate or dryer base.

#### Options:

- Vessel base column mounted for excellent access to the filter plate or dryer base
- Skid mounted vessel or vessel mounted on a support column
- Supplemental microwave heating to reduce time required for drying
- Aseptic versions, heel removal systems, contained discharge (Glove Box), DQ, IQ, OQ qualification
- PLC controls, autonomous or slaved to DCS, MCC



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