

Technical Specification DECAPRESS OV45N-422 with FSG- Drive

■ Description

The decanting centrifuge for olive oil production comprises of the rotor, the housing, the base frame which supports the rotor and the bowl and scroll drive system. The rotor consists of a feed pipe, the scroll, the cylindrical section of the bowl where the separation of the suspension takes place and a conical section of the bowl where the scroll extrudes and then discharges the solid.

■ Application

Separation of a light liquid phase (oil) from a solid-liquid suspension (solid/water). The specific density of a liquid phase is less than the specific density of the second liquid phase and the solid.

■ Operating principle

Through the feed pipe the olive mash enters the rotating feed chamber in the scroll. There it is accelerated in the direction of rotation and enters the rotating bowl through the feed ports in the scroll.

Under the effect of centrifugal forces the solid particles move to the bowl wall of the cylindrical section of the bowl. The marc, consisting of the solid parts of the olive and the fruit water, is conveyed by the scroll through the conical section to the discharge ports of the bowl.

The oil is discharged from the bowl over overflow edges (weir plates) in the head wall.

■ Bearing

The rotating bowl is supported by the main bearings, mounted in pillow blocks. Both pillow blocks are bolted and pinned to the base frame. The base frame is flexibly mounted on hollow rubber buffers.

■ Lubrication

The main bearings and the scroll bearings are lubricated with grease.

Subject to technical modifications without prior notice!

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Machine data

Inside bowl diameter	450 mm
Bowl length	1948 mm
Max. operating speed	3500 min ⁻¹
Acceleration	3063 x g
Ratio of bowl length to diameter	4.2

Length	3550 mm
Width	1250 mm
Height	1050 mm
Weight of the machine (w/o filling)	2.800 Kg

Standard Materials

Parts in contact with process-product	Stainless steel version
Bowl material	1.4392/1.4362
Scroll material	1.4404 / 1.4408
Housing material	1.4301
Parts not in contact with process-product	Carbon steel, cast steel
Bolts in contact with process-product and if statically possible: stainless steel (A4-80); special materials in consultation.	

Wear protection

Part		Standard
Scroll	Feed chamber	Hardened acceleration plate
	Flight face	*TC flame-sprayed
	Feed ports	Replaceable Guronit bushings
Bowl	Solids discharge ports	Replaceable hard metal bushings
Housing	Solids discharge side	stainless steel liner

*TC= tungsten carbide

Seals

Scroll bearing	Lip seal
Main bearings	Labyrinth seal
Housing	Labyrinth seal

Paint finish

Application	Type	Tint	Min.dry-coat thickness
Priming	Two-component metal-prime on the basis of epoxy resin with active protection against corrosion	dull grey	40 µm
Top coat	Two-component polyurethane-structure varnish half-shiny, structure medium	RAL 7015	60-80 µm

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■ Bowl drive

The bowl of the centrifuge is driven by an electric motor, which runs by frequency converter installed at the plant side to generate a variable bowl speed.

Electric motor data	
Output	22 kW
Rotation speed	3000 min ⁻¹
Voltage	400/690 V (50 Hz)
Type	180 M
Efficiency class	IE3
Design	B3
Type of protection	IP55

■ Scroll drive

The FSG-Drive generates a differential speed between the bowl and the scroll. The FSG-Drive consists of an electric motor, which also runs by frequency converter installed at plant side, and a planetary gearbox. The electric motor is connected to the scroll via the shaft of the planetary gearbox.

Gearbox data	
Type	FD065/163
Gear ratio	163
Differential speed	15 - 35 min ⁻¹
Torque *	5000 Nm

* The maximum torque depends on the differential speed!

Electric motor data	
Output	15 kW
Rotation speed	1500 min ⁻¹
Voltage	400/690 V (50 Hz)
Type	160 M
Efficiency class	IE3
Design	B3
Type of protection	IP55

■ Device for machine safety

- Vibration switch mounted on the base frame for monitoring vibrations according to DIN EN ISO 13849-1
- Speed sensors and frequency measuring converter (installation in the switch cabinet) for safe limitation of bowl speed according to DIN EN ISO 13849-1
- Resistance thermometer mounted on the main bearing pillow blocks for temperature monitoring

■ Control system HILLER SEE-Control pro

- Display 10" ProCap Touch with high performance
- Switchable local operating mode for operating on the device and remote operation mode for operating via master PLC or via the terminal strip.
- Simple and intuitive operation with plain text display: multiple languages selectable
- Complete process visualization of the centrifuge (bowl speed, drive load, differential speed)
- New design with dark-light-mode for best operation
- Ability to enter the bowl speed, differential speed, control parameters, etc.
- Torque dependent regulation of the differential speed
- Generation of a clearing speed below a preselect able bowl speed
- Manual operation mode with manually preselect able differential speed
- Generation of 4 parameter sets for different products
- Trend analysis of the bowl speed, differential speed, bearing temperature, vibration, drive torque
- Save trend data one year
- Online fault diagnosis with plain-text error log
- Password protection of the operating data
- Profinet or digital and analog in- and outputs for the comprehensive operation of the device by a master PLC or via the terminal strip
- Painted circuit boards for best protection against corrosion
- Control of slide gate possible

■ Frequency inverter

- TOSHIBA VF-AS3 for bowl and scroll drive
- STO
- **SLS, SMS or limiting maximum frequency**
- Contains the line filter according to category C2/C3 IEC 61800-3
- Contains dual-DC choke to comply with harmonic currents standard IEC 61000-3-12 (THD <48%)
- Painted boards
- Ambient temperature -10 ° C to + 60 ° C
- Protection class IP20
- Voltage and frequency range 380-480 V (+10% ... -15%) - 50/60 Hz ($\pm 5\%$)
- Flying restart
- Analog output for torque
- Overload capacity
120% for 60 and 135% for 2s
- External auxiliary voltage
- Operation module
- Power saving mode
- Digital Input for release
- PTC input
- Web server
- Vector control
- Special speed/torque control in the lower frequency range
- Frequency set value accuracy $\pm 0,2\%$
- Torque calculation accuracy $\pm 1\%$

