

Technical Specification DECAPRESS DP484/51212/FD 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

Three-phase separation of a solid-liquid mixture consisting of two liquid and one solid phase (water/oil/solid). The specific density of the solid is higher than that of the two liquid phases. The liquid phases also differ in their density.

■ 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 solid is conveyed from the scroll via the conical section of the bowl to the discharge ports in the bowl.

The heavy liquid phase (fruit water) is discharged from the bowl by means of height-adjustable overflow edges (weir plates) in the head wall.

The light liquid phase (oil) is drawn off via height-adjustable tubes (nozzles) at the cylindrical end of the bowl.

■ 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	480 mm
Bowl length	2139 mm
Max. bowl speed	3500 min ⁻¹
Acceleration	3267 x g
Ratio of bowl length to diameter	4.5

Length	3800 mm
Width	1550 mm
Height	1110 mm
Weight of the machine without quartz sand filling	44,1 kN

Standard Materials

Parts in contact with process-product	Stainless steel version
Bowl material	1.4470
Scroll material	1.4408 / 1.4535 / 1.4301
Housing material	1.4404
Parts not in contact with process-product	Carbon steel, cast steel
Bolts in contact with process-product (if mechanically possible from the static) are in stainless steel (A4-80); special materials in consultation.	

Wear protection

Part	Standard	
Scroll	Feed chamber	Replaceable chill casting acceleration plate
	Flight face	TC flame-sprayed
	Feed ports	Replaceable chill casting bushings
Bowl	Solids discharge ports	Replaceable hard metal bushings
Housing	Solids discharge side	Stainless steel liner

Seals

Scroll bearing	Radial shaft seal
Main bearings	Labyrinth- and lamellar rings
Housing	Vapour-proof

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 polyurethan-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 V-belts and an electric motor, which runs by frequency converter installed at the plant side to generate a variable bowl speed.

Electric motor data	
Output	30 kW
Rotation speed	3000 min ⁻¹
Voltage	400/690 V (50 Hz)
Type	200L
Efficiency class	IE2
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	FD105/87
Gear ratio	87
Differential speed	5-35 min ⁻¹
Torque	* 10.500 Nm

Electric motor data	
Output	22 kW
Rotation speed	3000 min ⁻¹
Voltage	400/690 V (50 Hz)
Type	160L
Efficiency class	IE2
Design	B3
Type of protection	IP55

* The maximum torque depends on the differential speed!

■ 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

■ HILLER SEE-Control system

- Switchable local operating mode for operation on the device and remote operation mode
Operation via the terminal strip (master PLC)
- Simple operation with plain text display: multiple languages selectable
- Complete process visualization of the centrifuge (bowl speed, drive load, differential speed)
- 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 preselectable bowl speed
- Manual operation mode with manually preselectable differential speed
- Generation of 4 parameter sets for different products
- Trend analysis of the drum speed, differential speed, bearing temperature, vibration, drive power
- Online fault diagnosis with plain-text error log
- Password protection of the operating data
- Digital and analog in- and outputs for the comprehensive operation of the device by a master PLC via the terminal strip

■ Frequency inverter

- TOSHIBA VF-AS3 for bowl and scroll drive
- Contain the line filter and DC choke
- painted boards
- Ambient temperature -10 ° C to + 60 ° C
- Protection class IP20
- Voltage and frequency range 380-480 V - 50/60 Hz
- Snap function
- Analog output for torque
- Overload capacity
120% for 60 and 135% for 2s