

# Technical Specification DECAPRESS DP664/51012/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

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!**

**Technical Specification DP664/51012/FD with FSG-Drive**
**Machine data**

|                                  |                        |
|----------------------------------|------------------------|
| Inside bowl diameter             | 660 mm                 |
| Bowl length                      | 2800 mm                |
| Max. bowl speed                  | 2900 min <sup>-1</sup> |
| Acceleration                     | 3084 x g               |
| Ratio of bowl length to diameter | 4.2                    |

|   |         |
|---|---------|
| Length  | 5130 mm |
| Width   | 2000 mm |
| Height  | 1500 mm |
| Weight of the machine without quartz sand filling | 96,7 kN |

**Standard Materials**

|   |                          |
|---|--------------------------|
| Parts in contact with process-product   | Stainless steel version  |
| Bowl material   | 1.4470                   |
| Scroll material   | 1.4470 / 1.4404 / 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 hard metal bushings              |
| Bowl    | Solid discharge ports | Replaceable hard metal bushings              |
| Housing | Solid 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              | 55 kW                  |
| Rotation speed      | 1500 min <sup>-1</sup> |
| Voltage             | 400/690 V (50 Hz)      |
| Type                | 250M                   |
| 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 <sup>-1</sup> |
| Torque             | * 10.500 Nm            |

\* The maximum torque depends on the differential speed!

| Electric motor data |                        |
|---------------------|------------------------|
| Output              | 30 kW                  |
| Rotation speed      | 3000 min <sup>-1</sup> |
| Voltage             | 400/690 V (50 Hz)      |
| Type                | 200L                   |
| Efficiency class    | IE2                    |
| 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

### ■ **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-PS1 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