

Technical Specification DecaPress® DP54-422 with HILLER-Hydraulic

■ Description

The Decanting Centrifuge with scroll comprises of the rotating bowl, consisting of a feed pipe, a cylindrical section where the separation of the suspension takes place and a conical section where the scroll removes the dewatered sludge, the housing enclosing the rotor, the base frame bearing rotor and housing, and the bowl and scroll drive systems.

■ Application

High dewatering of sludge. The continuous separation of a solid-liquid suspension in which the specific gravity of the liquid is less than the specific gravity of the solid is accomplished using high bowl speeds and low scroll differential speeds at high scroll torques.

■ Operating principle

The feed suspension enters the rotating feed compartment through the feed pipe. There it is accelerated in the direction of rotation and enters the rotating bowl via the feed ports in the scroll hub. The solid particles move towards the bowl wall of the cylindrical section under the effect of the centrifugal forces.

The settled solids are moved by the scroll to and through the conical section, at the end of which they are discharged through the discharge ports of the bowl as dewatered solids („cake“). The liquid effluent is discharged from the bowl over adjustable weir plates at the feed end.

The difference between bowl speed and scroll speed is defined as differential speed.

■ 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

Lubrication of the main bearings and the scroll bearing is by grease lubrication.

Subject to technical modifications without prior notice!



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Machine data

Inside bowl diameter	544 mm	Length	3660 mm
Bowl length	2359 mm	Width	1632 mm
Max. bowl speed	3300 rpm	Height	1324 mm
Acceleration	3291 x g	Weight of the machine	51 kN
Ratio of bowl length to diameter	4.3	Weight of the machine without quartz sand filling	44 kN

Standard Materials

Parts in contact with process-product	Stainless steel version	Carbon steel version
Bowl material	1.4462 /	St52.0 / 1.0425
Scroll material	1.4463 / / 1.4301	St35 / St37
Housing material	1.4301	St37
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).		

Wear protection

Part		Standard	Special (examples only)
Scroll	Feed chamber	Hardsurfing with flame sprayed tungsten carbide powder	–
	Flight face		Replaceable tiles with sintered tungsten carbide, ceramic or silicon carbide
	Feed ports	Replaceable sintered tungsten carbide bushings.	Replaceable ceramic or silicon carbide bushings.
Bowl	Solids discharge ports		

Seals

Scroll bearing	Radial shaft 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 polyurethan-structure varnish half-shiny, structure medium	RAL 5002 ultramarine-blue	60-80 µm
Bowl/Scroll (Carbon steel version only)	Coating with Inertol Poxitar SW	black	50 µm



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■ Bowl drive

The bowl is driven by means of an electric motor via V-belts, in combination with a frequency converter (by others) for start-up and bowl speed adjustment.

Bowl drive motor	
Output	45 (55) (kW)
Rotation speed	3000 rpm
Voltage	400/690 V (50 Hz)
Type	225M (250M) (
Design	B3
Type of protection	IP55

■ Scroll drive

The hydraulic drive creates a differential speed between the bowl and the scroll. The hydraulic motor is mounted inside the bowl and the drive shaft of the hydraulic motor is connected to the scroll. The hydraulic motor is powered by a hydraulic pump unit. The hydraulic pump unit is typically located close to the centrifuge.

Continuous control of the hydraulic pump pressure enables instantaneous, step-less torque adjustments to maintain the differential speed, independent of the bowl speed. The variations in the feed properties can be compensated and optimal centrifuge performance is maintained.

Hydraulic pump unit			
Type	PAR 22046	Pump unit electric motor	
Control system	EMR 5000	Output	22 kW
Feed Pump	Variable axial piston pump	Rotation speed	1500 rpm
Flow rate	46 ltr/min	Voltage	400/690 V (50 Hz)
Hydraulic pressure	300 bars	Type	180L
Max. permanent pressure	250 bars	Design	B5
Tank volume	140 ltr	Type of Protection	IP55
Cooling water throughput	100-500 ltr/h (at max. 20°C)		
Weight (without oil)	380 kg		
Dimensions (H x L x W)	1350x900x630 mm		

■ Control system EMR 5000

- Real control system with set point-actual value comparison.
- Individually programmable pressure-dependent control characteristic in four parameter sets.
- Permanent display in a graphics-touch panel of all important process values such as bowl speed, differential speed, hydraulic pressure, oil temperature.
- 2 programmable limit values for hydraulic pressure.
- Trend analyses over differential speed and hydraulic pressure are retrievable.