



Alfa Laval CDNX range of decanter centrifuges

Decanter centrifuges for controlling drill solids



Introduction

For drill slurry treatment, high-speed separation, barite recovery, system de-weighting and removal of ultrafine particles.

Application

Alfa Laval decanter centrifuges are a key component in a top-quality drill slurry treatment process. This technology efficiently removes most of the fine particles that traditional slurry treatment equipment cannot deal with.

Specially designed and built for heavy-duty jobs in this field, the Alfa Laval CDNX range of decanter centrifuges is able to handle large amounts of feed solids, as well as coping well with abrasive and coarse particles.

CDNX decanter centrifuges are available with a range of modules ideally suited for every kind of solids separation job in conjunction with the drill slurries used on HDD drilling rigs, exploration rigs and Tunnel Boring Machines. These modules range from fully automated operation to simple “hands-on” capabilities, providing effective solutions to all your slurry treatment and separation issues.

Operating principle

Separation takes place in a horizontal cylindrical bowl equipped with a screw conveyor. The feed enters the bowl through a stationary inlet tube and is accelerated smoothly by

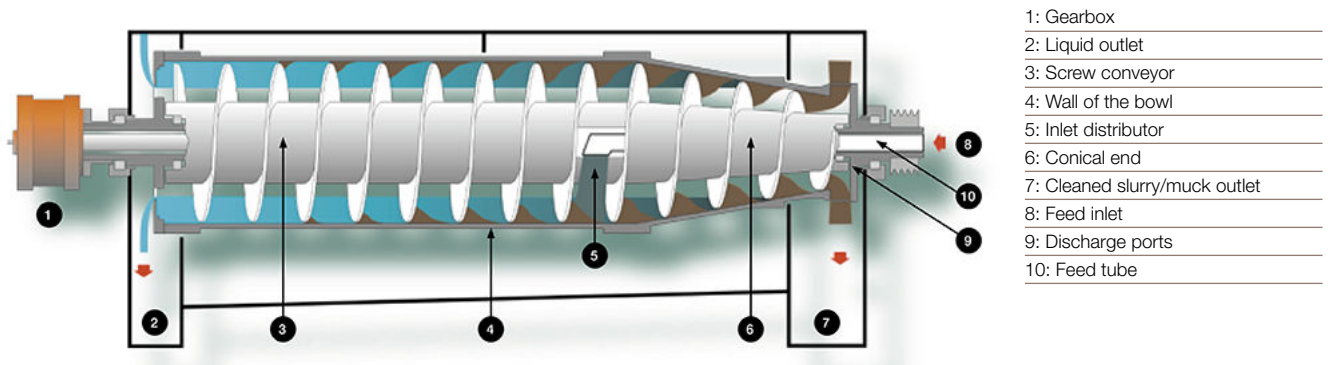
an inlet rotor. Centrifugal forces cause sedimentation of the solids on the wall of the bowl. The conveyor rotates in the same direction as the bowl, but at a different speed, thus moving the solids towards the conical end of the bowl.

The CDNX design enables the decanter to scroll out high loads of solids without blockages caused by high levels of dryness. Only the very driest fraction of the sludge cake leaves the bowl through the solids discharge openings into the casing. Separation takes place along the total length of the cylindrical part of the bowl, and the clarified liquid leaves the bowl by flowing over adjustable plate dams into the casing.

The CDNX decanter centrifuge can be adjusted to suit specific requirements by varying the bowl speed, the conveying speed, the pond depth and the feed rate.

Process optimization

- the bowl speed to ensure the exact G force required for the most efficient separation,
- the conveying speed for the best possible balance between liquid clarity and solids dryness.
- the pond depth in the bowl for the best possible balance between liquid clarity and solids dryness.
- the feed rate – the CDNX is designed to handle a wide range of flow rates.



Benefits

- Take advantage of CDNX solids separation technology
- Maximum solids recovery
- high G Force
- newest design technologies
- specially designed decanter geometry for larger process volumes Achieve lower cut-point and optimize your solids slurry treatment and drilling process. Improve fine removal and obtain better fluid clarity. Reduce mud costs.
- Outstanding improved wear protection
- patented feed zone design for optimal flow distribution
- fully covered replaceable parts in tungsten carbide
- improved solids outlet protection Increase the lifetime of wear parts and reduce your maintenance cycles.
- Drier solids
- optimized conveyor and bowl geometries for increased compaction capabilities. Reduce your waste volumes. Reduce your disposal costs.
- easy to troubleshoot and service, ensuring maximum centrifuge uptime
- compatible with multiple industry standards and communication protocols
- consistent and has easy-to-use interfaces Improve your operating reliability and optimize your processes. Save manpower and training costs.
- Unmatched flow rate capacity/diameter
- new generation of decanter centrifuges. Latest optimized designs
- 360-degree solids outlet. Treat larger process volumes in smaller machines and reduce your total costs per volume treated.
- Easier accessibility
- Lighter and smarter cover design
- Quick adjustable pond depth. Access easily the interior of the decanter. Optimize, service and clean faster, saving time and money.



Figure 2. CDNX 300, 400, 500, 700 Example of upgraded Conveyor wear protection



Figure 3. CDNX 100, 200 Standard Conveyor

Direct drive

The drive system that is an integral part of the CDNX design was specially developed by Alfa Laval to make it possible to control the conveying speed automatically. This ensures the best possible balance between liquid clarity and solids dryness, irrespective of any variations that may occur in the feed flow.

The Direct Drive system comprises an exceptionally efficient gearbox and variable frequency drive, which together avoid exposing the bowl drive to parasitic braking power. It also simplifies the electrical installation and keeps power consumption and CO2 emissions to the absolute minimum. In addition, the Direct Drive is capable of accurate control within the complete range of differentials, with no need for changing belts or pulleys.

Optional extras

- New generation of wear protection for use with extra-harsh and abrasive feeds
- A range of different power pack designs to optimise power consumption

Automation

Each CDNX decanter centrifuge can be equipped with an Alfa Laval Automation control package as standard – pre-installed and factory-tested

The combination of Automation control systems and CDNX separation technology ensures that you get the most out of any CDNX installation, at the same time as keeping costs for installation, commissioning, operation and maintenance to a minimum.



Figure 1. Alfa Laval spade able cake

Designation	CDNX 100	CDNX 100 CS ***	CDNX 200	CDNX 200 CS***
Bowl diameter	200 mm / 8 inches	200 mm / 8 inches	280 mm / 11 inches	280 mm / 11 inches
Bowl speed (maximum)	5300 rpm	5300 rpm	4400 rpm	4400 rpm
G-force (maximum)	3140 G	3140 G	3030 G	3030 G
Gross weight	650 kg / 1433 lbs	625 kg / 1378 lbs	1200 kg / 2645 lbs	1070 kg / 264 lbs
Length (L)	2150mm / 85 in	1725 mm / 68 in	3013 mm / 119 inches	3013 mm / 119 inches
Width (W)	580 mm / 23 in	580 mm / 23 in	780 mm / 31 inches	780 mm / 31 inches
Height (H)	762 mm / 30 in	762 mm / 30 in	1042 mm / 41 inches	1042 mm / 41 inches
Total installed power	7 – 14 kW / 9 – 19 Hp	4-11 kW / 5-15 hp	18.5-26 kW / 25-35 hp	18.5-26 kW / 25-35 hp
Main drive size	4-11 kW / 5-15 Hp	4-11 kW / 5-15 hp	11-18.5 kW / 15-25 hp	11-18.5 kW / 15-25 hp
Back drive size	3 kW / 4 hp		7.5 kW / 10 hp	

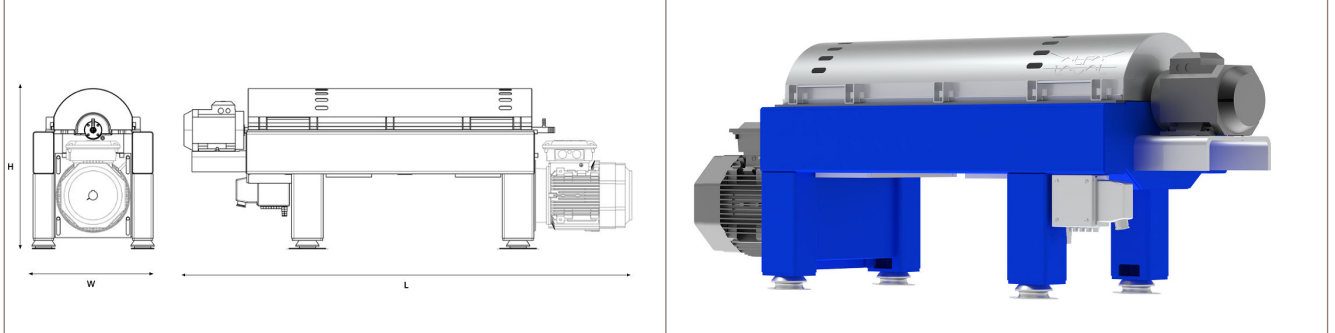
Designation	CDNX 300	CDNX 400	CDNX 500	CDNX 700
Bowl diameter	360 mm / 14 inches	440 mm / 17 inches	510mm / 20 inches	650 mm / 25 inches
Bowl speed (maximum)	4200 rpm	3800 rpm	3250 rpm	3100 rpm
G-force (maximum)	3550 G	3551 G	3011 G	3491 G
Gross weight	2250 kg / 5622 lbs	3700 kg / 8157 lbs	4650 kg / 10250 lbs	6500 kg / 14300 lbs
Length (L)	4280 mm / 169 inches	4730mm / 120 inches	UL 5340 mm / 21023 inches	6385 mm/ 251 inches
Width (W)	990 mm / 39 inches	1060 mm / 42 inches	1150 mm / 46 inches	1450 mm / 57 inches
Height (H)	1348 mm / 53 inches	1500 mm / 59 inches	1376 mm / 54 inches	1834 mm / 72 inches
Total installed power	22-48 kW / 35-70 hp	15-66 kW / 20-80 hp	90 kW / 120 Hp	83-205 kW / 109-273 hp
Main drive size	11-22 kW / 15-30 hp	11-45 kW / 50 hp	75 kW / 100 hp	37-160 kW / 50-200 hp
Back drive size	5.5-11 kW / 7 hp	5.5-15 kW / 7 hp	15 kW / 20 hp	15-30 kW / 20-40 hp

Cutpoint: D50: < 6µm, D90: < 60 µm for all sizes

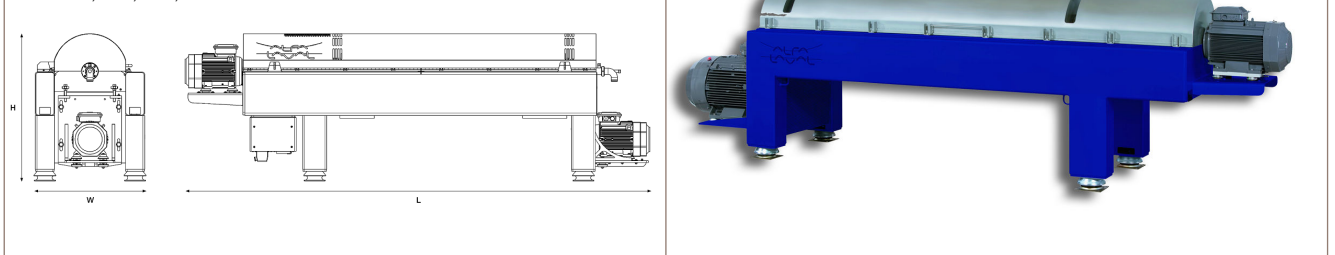
*** (CS) Countershaft Machine with fixed differential speed

Measurement

CDNX 100, 100CS, 200, 200CS



CDNX 300, 400, 500, 700



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