Alfa Laval Lynx decanter centrifuges

For drilling and construction site applications

Applications

Alfa Laval Lynx decanter centrifuges are designed and built for handling large amounts of feed solids, as well as coping with abrasive and coarse particles.

The Lynx decanters are used for dewatering and clarification processes in oil and gas drilling, for solids removal within exploration drilling, horizontal directional drilling (HDD), tunnel boring (TBM) and construction site wastewater treatment.

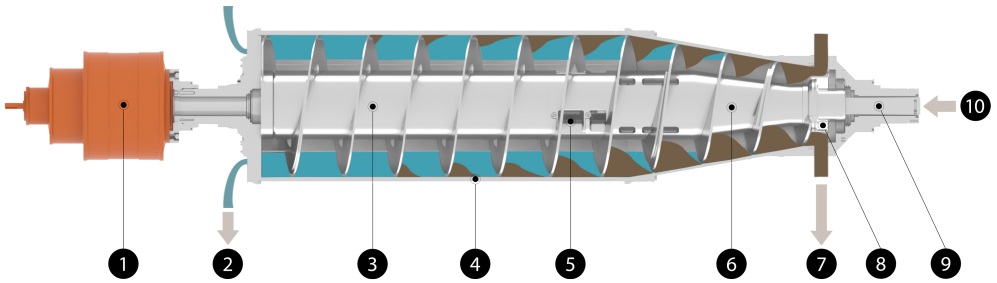
Lynx decanter centrifuges are efficiently removing most of the fine particles that traditional slurry treatment equipment cannot deal with.

Benefits

The Alfa Laval Lynx range of decanter centrifuges optimizes the slurry treatment in drilling processes and thereby reduces disposal costs and increases the liquid recycle rate by

- Handling larger process volumes due to the specially designed decanter geometry
- Achieving lower cut point thereby improving fines removal to obtain higher fluid clarity
- Increased compaction capabilities through optimized conveyor and bowl geometries
- Having consistent and easy-to-use interfaces that improve operating reliability saving manpower and training costs

Decanter design and functionality



1: Gearbox
2: Liquid outlet
3: Screw conveyor
4: Wall of the bowl
5: Inlet distributor
6: Conical end
7: Cleaned slurry/muck outlet
8: Discharge ports
9: Feed tube
10: Feed inlet

Cross section of the interior of the decanter - the rotating assembly

Working principle

Separation takes place in a horizontal, cylindrical bowl equipped with a screw conveyor. The feed is led into the bowl through a stationary inlet/feed tube [10] and smoothly accelerated by an inlet distributor – the feed zone [5].

Centrifugal force causes sedimentation of the suspended solids inside the bowl [4].

The conveyor [3] rotates in the same direction as the bowl, but at a different speed – called the differential speed. This difference moves the solids to the conical end, where these solids are lifted out of the liquid level (pond) into a dry zone (beach), where the capillary liquid can be drained centrifugally, before being discharged through the solids outlet [7] into the casing.

Separation takes place over the entire length of the cylindrical part of the bowl and the clarified liquid(s) leave(s) the bowl by flowing over an adjustable weir into the casing.

Design

Lynx decanter centrifuges are designed with focus on performance, reliability, efficiency, easy access and low noise level. The rotating assembly is mounted on a compact, welded box beam frame with main bearings at both ends. The cover is equipped with hinges to ensure easy access. The motors are mounted in-line on the decanter itself to ensure the smallest possible footprint. The bowl is driven at the conical end by an electric motor with V-belt transmission.

Drive system

Direct Drive is a unique system developed by Alfa Laval for automatic control of the differential speed between the bowl and the conveyor. This makes it easy to maintain the best possible balance between liquid clarity and solids dryness, irrespective of variations in the feed.

Direct Drive comprises a new type of gearbox and variable frequency drive, which do not expose the bowl drive to parasitic braking power loss. The electrical installation is straight forward, power consumption is kept to a minimum, and accurate control is achieved within a wide range of differentials

Automation

Decanter centrifuges equipped with variable frequency drives (VFD) are also available with control solutions to comply with your specific operating requirement. Whether you are looking for a control system that operates the decanter only or to more advanced control systems with additional functionality. Alfa Laval decanter automation can help you achieving your specific process performance goals by easy process adjustments, real-time status feedback, automated process adjustments and automated cleaning cycles.

Process optimization

The Lynx decanter centrifuges can be adjusted to suit specific requirements by varying the

- bowl speed to obtain the required G-force for optimized separation
- conveying speed to optimize the balance between liquid clarity and solids dryness
- pond depth in the bowl to optimize the balance between liquid clarity and solids dryness
- feed flow – the Lynx design is capable of handling a wide range of flow rates.

Connected Services

Alfa Laval decanter centrifuges with decanter automation can be fitted with IoT connectivity hardware that can provide you with operating data at your fingertips, condition monitoring and process optimization. Please refer to the Alfa Laval website for more information.

Key features and options

Materials

The bowl, conveyor, inlet tube, outlets, cover and other parts that are in direct contact with the process media are all made of stainless steel or duplex steel. The frame is made of mild steel with an epoxy enamel finish. The solids discharge ports, conveyor flights and feed zone are protected with materials that are highly resistant to abrasive solid particles.

Solids discharge ports

The Alfa Laval 360° solids discharge is designed to minimize the solids friction resistance upon scrolling out of the decanter bowl. This enables processing of large process volumes in smaller machines, by increasing the discharge rate of the solids. The solids discharge ports are protected against wear by use of exchangeable inserts made of tungsten carbide.

Feed zone

The feed zone is available with exchangeable wear liners made of tungsten carbide for additional wear protection.

Flight protection

Depending on the abrasiveness of the solid particles the screw conveyor flights can be equipped with hard surfacing and/or protection tiles.

Example of the tungsten carbide tiles fitted on a Lynx decanter centrifuge

Hazardous locations

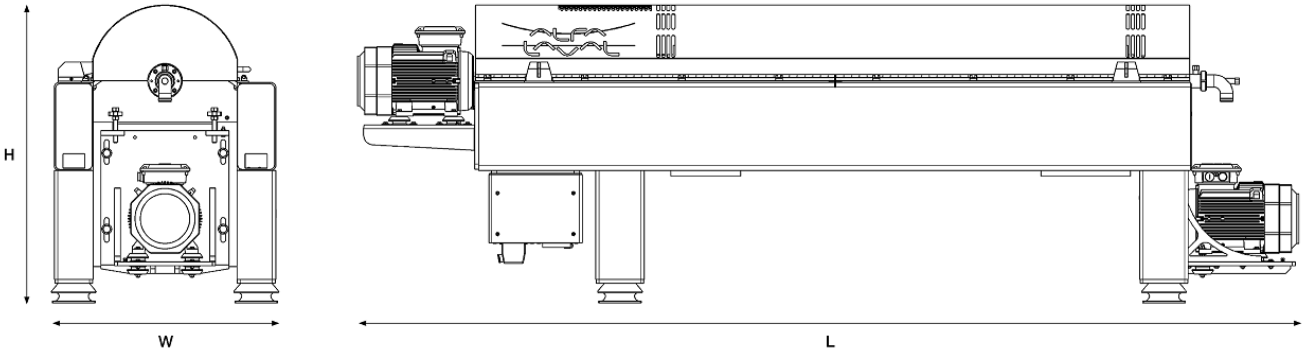
Alfa Laval offer decanters for operation in Hazardous locations. Our decanters are designed for use in Zone 1 or 2 and marked with ATEX equipment category II 2G Ex h IIB T3 Gb or HazLoc Class1, Div. 1, Group C&D T3.

Easy access

The frame casing is a box beam profile type, with integral casing with hinges. The material of the casing and cover is AISI 316 stainless steel and SS cladding in the neutral bowl's compartment. Due to its particularly smart design, Alfa Laval decanter centrifuge can be quickly serviced. It takes less than 3 hours to exchange a complete rotating assembly.

Service

Investing in an Alfa Laval decanter is the first step towards a unique partnership offered by Alfa Laval Service. Our strong Service presence in local markets combined with skilled Field Service Engineers gives you the support that you need to maximize uptime in your process. A Service Agreement takes this one step further in building a strong partnership. Contact your local Alfa Laval sales for more information.



Technical specifications

Designation	Lynx 20	Lynx 28	Lynx 36	Lynx 44
Typical solids capacity	0.5 t/h	1.5 t/h	5 t/h	8 t/h
Bowl diameter	200 mm / 7.9 inches	280 mm / 11.0 inches	360 mm / 14.2 inches	440 mm / 17.3 inches
Bowl speed (maximum)	5300 rpm	4400 rpm	4200 rpm	3800 rpm
G-force (maximum)	3146 G	3036 G	3556 G	3558 G
Gross weight	600 kg / 1323 lbs.	1400 kg / 3080 lbs.	2250 kg / 5322 lbs.	3600 kg / 7937 lbs.
Length (L)	2154 mm / 84.8 inches	2936 mm / 115.6 inches	4154 mm / 163.5 inches	4708 mm / 185.4 inches
Width (W)	570 mm / 22.4 inches	780 mm / 30.7 inches	990 mm / 39.0 inches	1060 mm / 41.7 inches
Height (H)	762 mm / 30.0 inches	930 mm / 36.6 inches	1239 mm / 48.8 inches	1382 mm / 54.4 inches
Back drive control*	CS and VFD	CS and VFD	VFD	VFD

Designation	Lynx 50	Lynx 65	Lynx 72	Lynx 100
Typical solids capacity	15 t/h	20 t/h	40 t/h	60 t/h
Bowl diameter	500 mm / 19.7 inches	650 mm / 25.6 inches	720 mm / 28.3 inches	1000 mm / 39.4 inches
Bowl speed (maximum)	3600 rpm	3100 rpm	2900 rpm	1875 rpm
G-force (maximum)	3629 G	3498 G	3391 G	1969 G
Gross weight	4900 kg / 10803 lbs.	6500 kg / 14300 lbs.	8600 kg / 18959 lbs.	18500 kg / 37700 lbs.
Length (L)	4985 mm / 196.3 inches	6450 mm / 253.9 inches	6900 mm / 271.7 inches	8822 mm / 347.3 inches
Width (W)	1190 mm / 46.9 inches	1450 mm / 57.1 inches	1510 mm / 59.4 inches	2050 mm / 80.7 inches
Height (H)	1534 mm / 60.4 inches	1834 mm / 72.2 inches	1850 mm / 72.8 inches	2248 mm / 88.5 inches
Back drive control*	CS and VFD	CS and VFD	VFD	VFD
*CS: Countershaft Machine with fixed differential speed (The belts and pulleys can be manually changed during shutdown) VFD: Variable frequency drive				

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How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com