PENNWALT

SUPER-D-CANTER

PENNWALT

Operation of Super-D-Canter centrifuge

The Super-D-Canter is a specially developed solid bowl centrifuge for effective separation of slurries into liquid and solid phases.

The superiority of the Pennwalt Super-D-Canter is determined by the following factors:

1- High Efficiency: Super-D-Canter operates on the centrifugal sedimentation process. The high sedimentation efficiency and torque capability enables the Super-D-Canter to absorb feed variations more effectively than other types of centrifuges or separation equipment.

2- Continuous Operation: The Super-D-Canter adds to improved production by its continuous operation. Additionally, the Super-D-Canter with its control system only requires minimal operator supervision. The Super-D-Canter can replace batch filters, continuous filters, and static sedimentation equipment for solid liquid separation applications.

3- Can replace batch filters, continuous filters and static sedimentation equipment for solid liquid separation.

4- Flexibility in design: With a proper selection of design parameters, the Pennwalt Super-D-Canter becomes an extremely flexible separation tool with application areas involving:

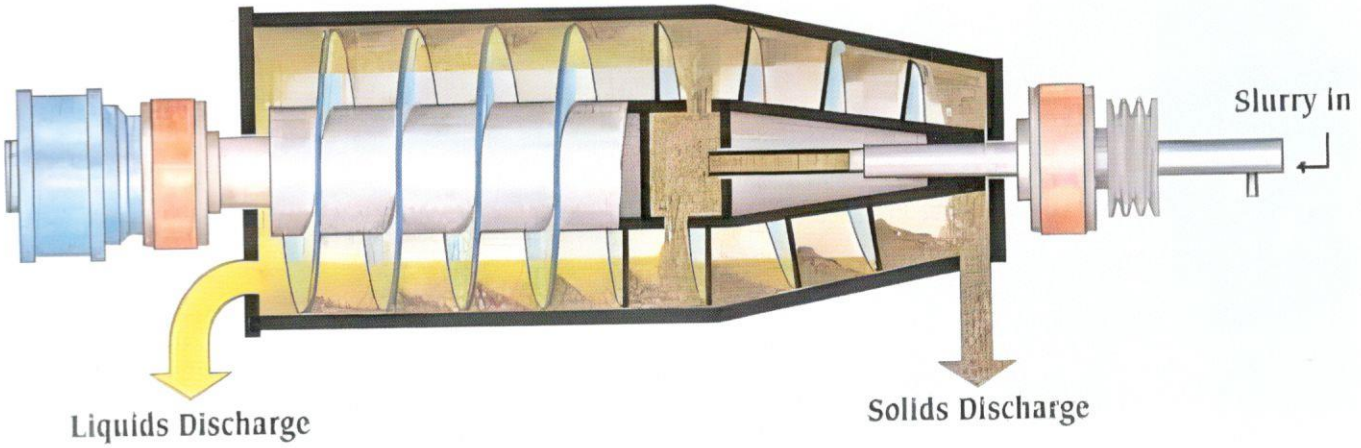
- Clarification of liquids
- Classification of solids
- Concentration / thickening of solids and
- Dewatering of solids

The Super-D-Canter can handle a wide range of solid particles from 6 mm diameter to a few microns and a slurry concentration varying from 0.5% to 65% w/w.

5- Economic Operation: Savings in energy, space, manpower and maintenance costs make the Super-D-Canter an economic, cost-effective and trouble free equipment in your plant.

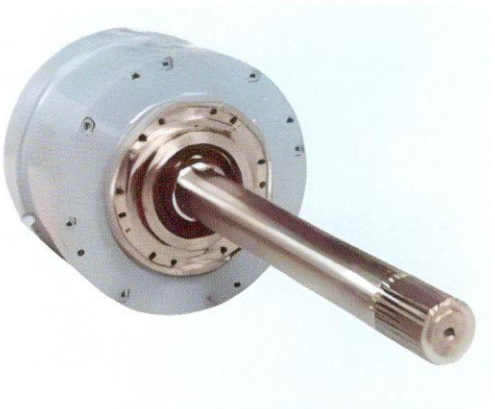
Continuous operation

The solids are continuously separated from the liquid phase by application of centrifugal force ranging from 2000 to 3000 times the force of gravity. The denser solid particles are sedimented against the rotating bowl wall. The less dense liquid forms an inner concentric layer. Adjustable dam plates enable the depth of liquid or "pond" to be varied. The sedimented solid particles are continuously removed from the bowl by the action of a helical screw conveyor or scroll. The conveyor rotates at a lower speed than the bowl, the differential speed being primarily determined by the gearbox. The solids are ploughed out of the pond and up the conical beach. The centrifugal force compacts the solids and expels the surplus liquid. The dewatered solids discharge over the 360^0 lip of the bowl. The clarified liquid overflows over the dam plates fixed at the opposite end of the bowl.



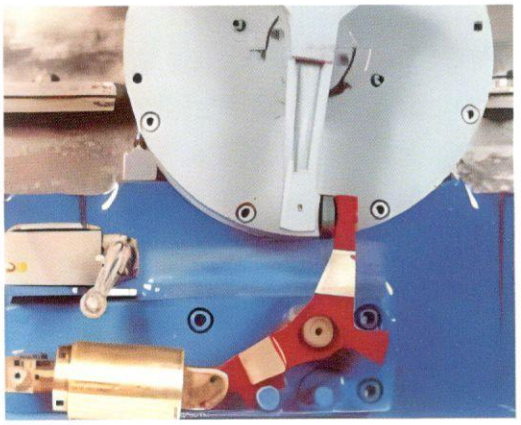
Features of SUPER-D-CANTER centrifuge

Stressed rotating components are precision machined from centrifugally cast stainless steel.



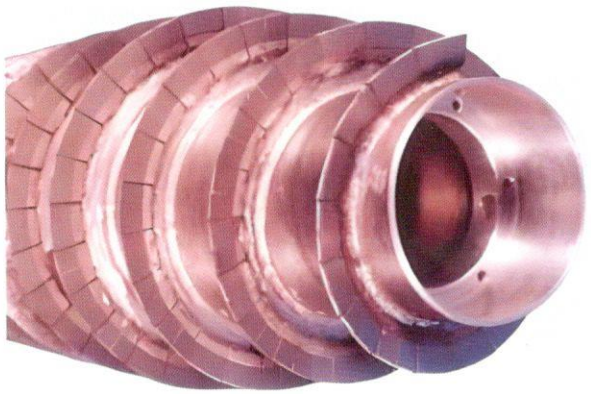
High strength, high capacity epicyclic gearbox designed exclusively for Pennwalt Super-D-Canter.

360° solids discharge giving unrestricted solids exit coupled with high capacity, fully abrasion protected using sintered tungsten carbide shields.



Gearbox overload protection either by clutch or torque arm. Easily reset without the need for shear pins.

Protection against wear



Super-D-Canter scroll showing the tungsten carbide tiles in position.

All wear-prone areas of the Super-D-Canter centrifuge – feed zone, solids discharge, bowl and scroll are protected by hard surfacing. The type of material chosen is to combat the severity of the wear. While hard surfacing materials like stellite are satisfactory for low and medium abrasive duties, the life of the scroll may be as low as 1000 hours on more arduous materials. It was for such applications that Pennwalt developed a protection system using sintered tungsten carbide tiles.

Applications of Super-D-Canter centrifuge

The flexibility of Super-D-Canter design has proved effective in a wide range of applications in the processing industries. From separation of dilute suspensions of low solids content to dewatering and concentrating thick slurries containing large quantities of solids, the Super-D-Canter has attained a superior position in the solid-liquid separation technology. Following is a selected list of applications successfully performed by the Pennwalt Super-D-Canter.

Animal Blood, Calcium carbonate, Calcium sulphate, Chloralkali sludge, Coal tailings, Distillery stillage, DMT, Drilling mud, Fine chemicals, Fish liquors, Fruit juices and pulp, Guar gum slurry, Herbal extract, Industrial effluents, Inedible tallow, Instant tea, Kaolin clay classification, Lactose, Municipal sewage, Pigments, Polymers, Polystyrene, PVC dewatering, Radioactive effluent, Sodium sulphate, Soya Lecithin, Synthetic fibers, Titanium Dioxide, Vegetable oils.

Pilot plant testing

A full scale pilot plant unit is available for conducting pre-selection trials with the customer's samples. The trial would be helpful in the scale-up to the most suitable equipment for a particular application.

General specifications

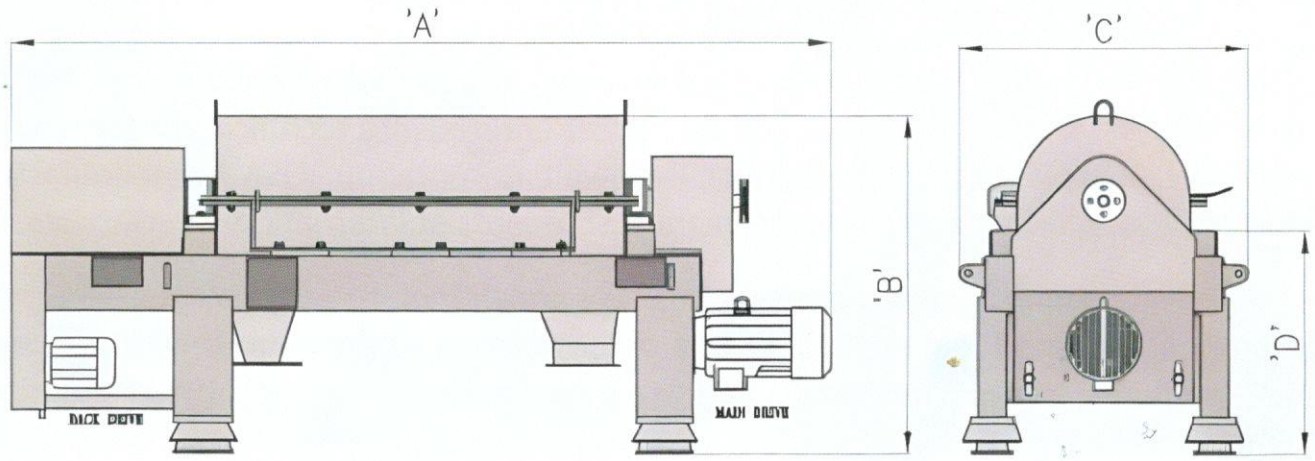
Four crucial factors govern the performance of the decanter centrifuge.

- Centrifugal force required to sediment the solids
- Clarification of the liquid phase
- Differential speed required between the bowl and the scroll to convey the solids
- Hydrodynamic design to minimize turbulence

In specifying a decanter for a particular application, the following design features have to be considered:

- Pitch of the conveyor
- Feed zone design
- Beach angle
- Bowl surface
- Abrasion resistance
- Materials of construction
- Sedimentation enhancing features

The correct combination of the above features ensures the desired decanter performance at minimum cost.



Model	Operational Bowl Speed		Maximum Bowl Speed		Main Drive motor Power kW (Max)	Back Drive Motor Power kW (Optional)	Overall Dimensions (in mm)				Net Wt. (kg)
	RPM	G-Force	RPM	G-Force			A	B	C	D	
P-600 (semi-continuous)	5000	2000 x G	6000	3070 x G	3.7	0.37	1510	742	593	488	230
P-660 (continuous)	5000	2000 x G	6000	3070 x G	3.7/5.5	0.37	1665	800	650	590	250
P-1500 (continuous)	3880	2000 x G	4640	3060 x G	7.5	1.5	1965	1000	800	625	410
P-2000 (continuous)	3150	2000 x G	4000	3180 x G	15	1.5/2.2	2150	1211	1018	802	1160
P-3000 (PM-20000) (continuous)	3150	2000 x G	4000	3180 x G	15/22	2.2/3.7	2362	1211	1018	802	1297
P-3400 PM-30000 (continuous)	3150	2000 x G	4000	3180 x G	22/30	3.7/5.5	2923	1211	1018	802	1842
PM-35000 (continuous)	2900	2000 x G	3150	2360 x G	22/30	5.5	2923	1211	1018	802	2230
PM-36000 (continuous)	2900	2000 x G	3150	2360 X G	30/37	5.5	3641	1296	1125	851	2820

Compliances

1- Pennwalt manufactures CE compliant Super-D-Canter centrifuge models P600, P660, P2000, P3000, P3400, PM35000 and PM36000 adequately covering the requirements under the provisions of

- EC machinery directive – 2006/42/EC
- EMC directive – 2014/30/EU

2- Pennwalt has been approved by Lloyd's Register Quality Assurance to the ISO 9001:2015 Quality Management System Standards.

www.pennwalt.com

Please check for your local contact

Pennwalt Private Limited was incorporated in India in 1959 with the shareholding of the erstwhile Sharples Corporation, USA and thereafter entered into technical collaboration with the erstwhile Sharples-Stokes Division of Pennwalt Corporation, USA for manufacture of world class separation equipment to the highest standards of international perfectionism.

Pennwalt Private Limited is a fast growing business conglomerate with a strong presence in the Indian and International market. With a determination to move up the value chain in process, products and performance, Pennwalt has always been acknowledged for its excellence.

Thus Pennwalt Private Limited has a strong technological base and wide-ranging expertise in the manufacture, installation, commissioning, applications engineering and supply of solid-liquid, liquid-liquid, and particle size separations equipment tailored precisely to match customer-specific requirements on a world-wide basis.

Distributed by: