

◆ Shaftless Screw Conveyors

Advantages

Shaftless screw conveyors are accepted as the leading method for the transportation of difficult materials (eg. wet pulp, fibrous or sticky substances). In addition, the fully enclosed system means effective, safe and silent transportation in a clean and odorless environment. The absence of a shaft and intermediate bearings minimizes the risk of clogging.

Application

The thousands of installations ML has completed worldwide include transportations of screenings, dewatered sludge, grit and sand from sewage treatment and applications in the food, chemical and paper and pulp industries.

Standard Design

The conveyors are produced from standard components tailored to the requirement of each site. The troughs, available in stainless steel 304 or 316, have a wear resistant liner selected according to the application and duty.

Most commonly used are ultra high molecular weight polyethylene (with optional indicator layer), polyurethane or hardened steel wear bars. Spirals are manufactured using specialty steel (or stainless steel) and a cold forming technique to optimize strength. Longer or heavier duty conveyors are supplied with inner spirals to increase axial strength and capacity. Single units up to 20 meters in length can be delivered with push or pull drives depending on the material conveyed.



A conveyor, 18.5 m in length, for the transport of dewatered sludge, Eeklo, Belgium.



A radial conveyor installation, Utrecht, Holland.

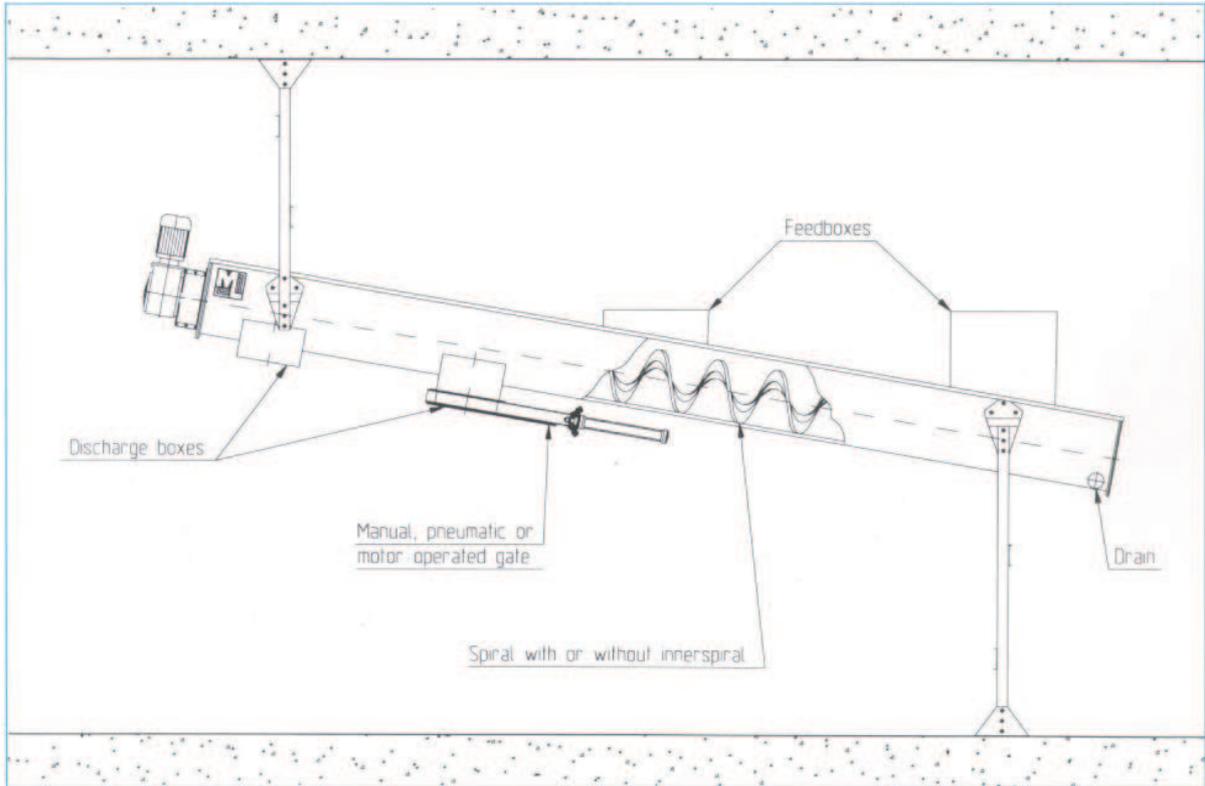


A section of 480 mm diameter screw and trough.

Options

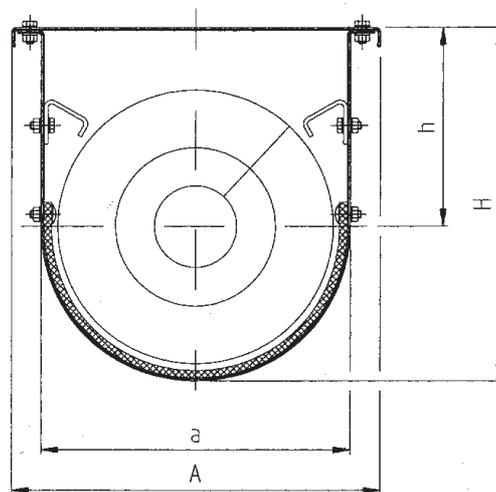
Feed and discharge are according to the layout of the plant, but multiple or regulated discharge is facilitated through knife gates which can be manually, electrically or pneumatically operated.

Other options for conveyors include pivots, wheel supports, carriages etc. for radial conveyors; electronic overload protection, motion sensors or trip switches; gland boxes for wet material and an axial support bearing to minimize stress on the drive unit.



A typical layout of a stand alone conveyor with two feed and discharge points.

Spiral diameter	Dimensions (mm)			
	A	a	H	h
SC 190	290	230	270	155
SC 285	382	320	365	205
SC 360	476	406	460	255
SC 480	649	539	603	333
SC 580	753	643	725	403



A cross section view of the trough, screw and liner. Covers and liners can be bolted or of snap locking construction.

Spiral diameter	Capacities (m ³ /hr) / Angle of inclination			
	0°	10°	20°	30°
SC 190	2.8	2.5	2.1	1.2
SC 285	10	9.0	7.5	4.5
SC 360	20	18	15	8.5
SC 480	40	36	30	19
SC 580	80	72	60	38

Capacity

Capacity figures represent maximum recommended capacities in m³/h for a conveyor rotating at 32 rpm handling typical dewatered municipal sludge. For screenings and similar difficult materials, typical speed is 12 rpm and capacities are reduced to 20% of those shown. Conveyors can be inclined up to 30° although over 20°, a double spiral is recommended.

Equipment for Headworks

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Screw Conveyor with Dewatering Unit (SCD)

Application

Shaftless screw conveyors can be supplied with a dewatering zone for removal of liquid and any suspended or dissolved matter (e.g. organics) from wet or sticky materials. An increase in the dry solid content and, therefore, volume reduction, in the conveyed material of up to 75% can be achieved depending on the application.

ML has hundreds of installations of the SCD screw conveyor with dewatering unit for sewage treatment and industrial processes. The unit is ideal for combination with ML's fine screens for recovery of organics and drying of screenings.

Standard Design

The dewatering unit, which consists of a fine wedge wire screen and flushing system can be used with all ML's shaftless conveyors. A weighted, hinged outlet gate allows effective discharge whilst avoiding odour problems. A double spiral is supplied as standard for increased axial strength and capacity.

Options

Additional options, beyond those available for standard conveyors, include insulation for the dewatering zone and a bagging unit for hygienic disposal of material directly into sealed sacks.

Capacity

For standard applications, the capacity of the screw conveyor is unchanged by the addition of a dewatering unit.



Dewatering zone



SCD 480, length 2.5 m

Flexible Solutions

Shaftless screw conveyors are sold as stand alone units, complex integrated systems or together with Sam McCoy's range of screens. Several variations of the basic concept are available including dewatering units, grit classifiers, screenings washer, screw screens and vertical shaftless conveyors, for more flexible plant design.



Fine screens and conveyor, Eeklo Belgium

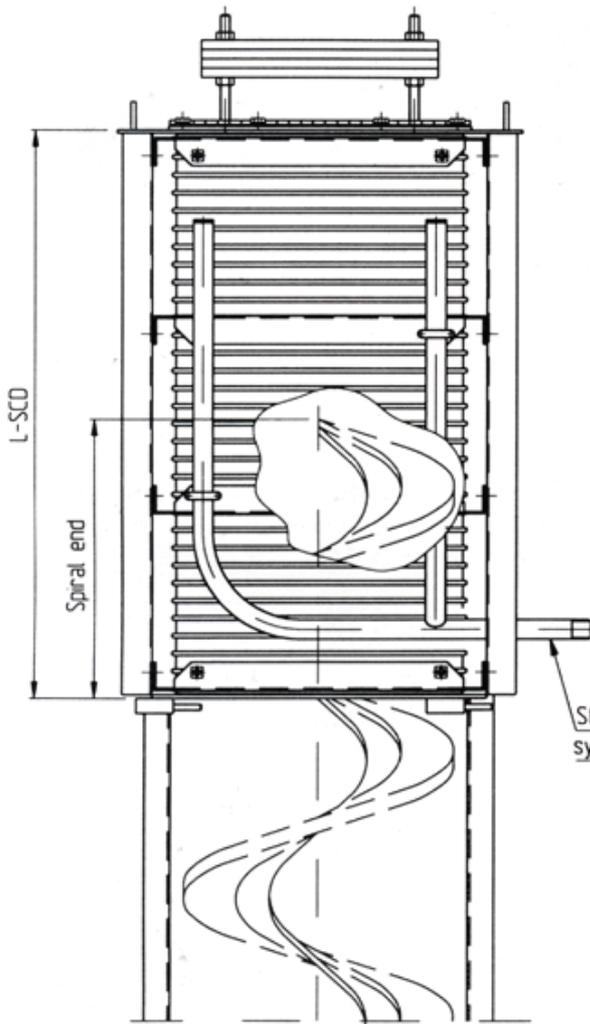


SCDW screenings washer

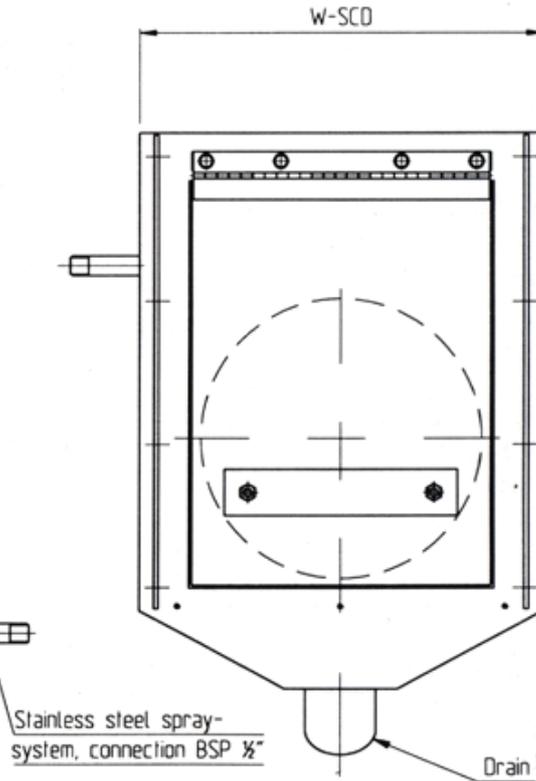


Screw conveyor with dewatering unit

View from above without cover



View of discharge



Drawings show the dewatering zone and discharge for the SCD range together with a table of dimensions.

Type	L-SCD (mm)	W-SCD (mm)	Drain (inch)	Spiral end (mm)
SCD 190	609	342	3	300
SCD 285	609	430	3	300
SCD 360	609	508	3	300
SCD 480	1008	630	4	500
SCD 580	1008	740	4	500