

Tubular Screw Conveyor



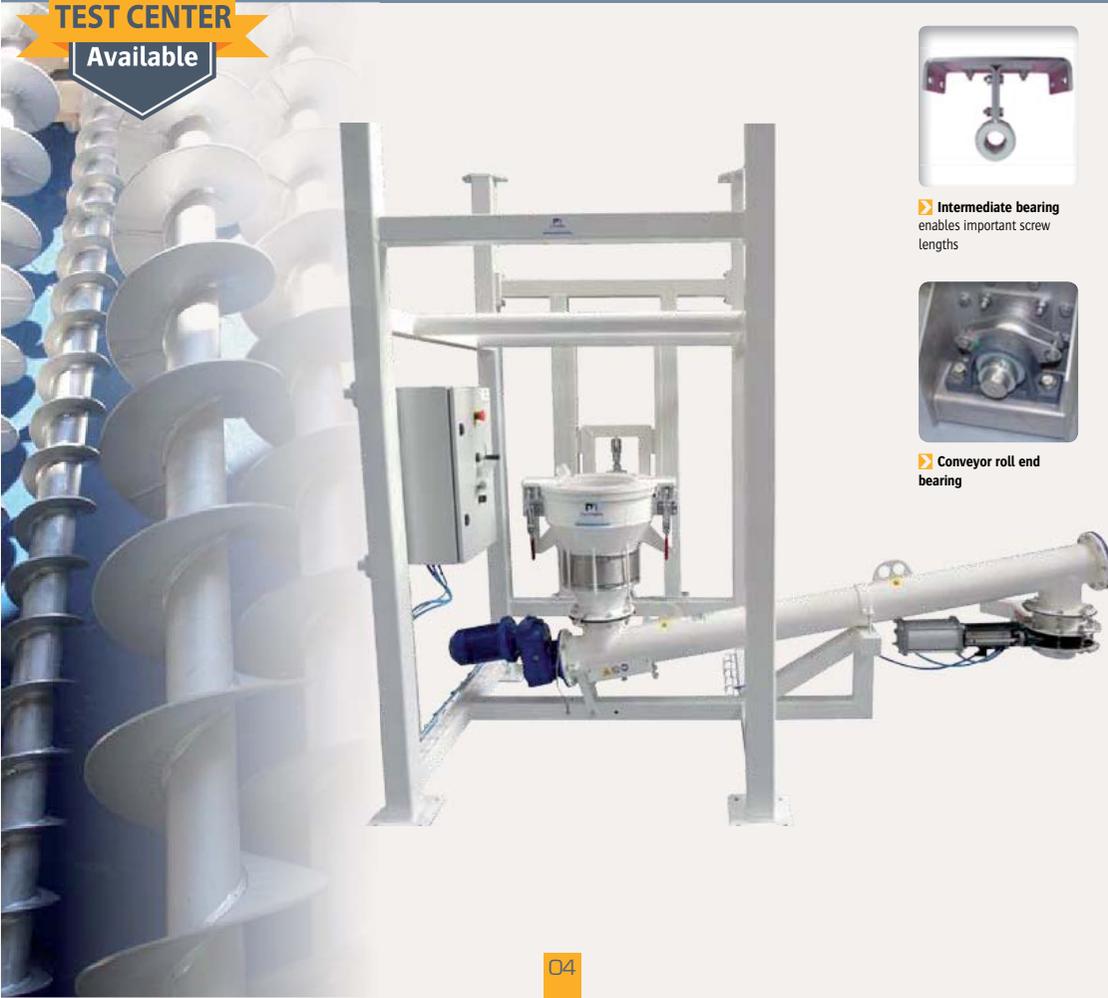
Tubular Screw Conveyor

Capacity: up to 450 m³/h.
Objectives: to ensure a continuous operation of the system

CONTINUOUS CONVEYING OF BULK OR POWDERY MATERIALS

PALAMATIC PROCESS tubular screw is designed to convey powdered or granular materials at different flow rates. Depending on the design and finishes of the screws, they can be implemented in all industries: food processing, concrete, premixes for the building industry, glass or molding industry, water treatment plants, milling, the animal feed, food processing, packaging, plastics, chemical and pharmaceutical industries.

Equipment
TEST CENTER
 Available



Intermediate bearing enables important screw lengths



Conveyor roll end bearing

TECHNICAL SPECIFICATIONS

Manufacturing: mild steel, stainless steel 304L, stainless steel 316L
Helical blades welded onto the central tube
Inlet/outlet opening: from Ø114 to Ø660 mm.
Maximum slope: 40° (depends on the load rate of the screw)
Engine: electric 400 v. three-phase asynchronous
Length: 1 to 13 m.
ATEX zone 20/22
Power: 1.5 to 7.5 kW
Transmission type: direct, belt or chain
Operating temperature up to 60°C (higher temperature on request)



This equipment is suitable for dosing operation



Multi-output bottom



Stainless steel 304L / 316L design



End bearing with shaft sealing group

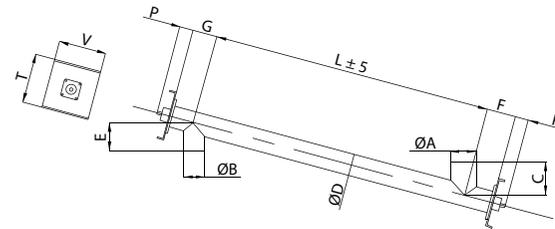


Modular design

Advantages



DIMENSIONS IN MM.



Ø	ØA	ØB	C	ØD	E	F	G	L	P	T	V
100	114	114	Custom made	114	Custom made	140	120	Custom made	114	280	265
120	139	139		139		140	120		114	280	265
150	168	168		168		160	140		124	280	265
200	219	219		219		180	160		124	355	315
250	273	273		273		220	180		124	410	365
300	323	323		323		220	220		124	465	435
350	406	406	Custom made	406	Custom made	270	280	Custom made	151	535	485
400	457	457		457		280	320		151	590	540
400	457	457		457		280	320		151	590	540
500	558	558		558		340	360		162	740	655

Options



Interior finishes (Ra 0.5 - mirror polished)



Rotation controller

Tubular Screw Conveyor



Capacities and Powers

The flow rate is determined according to the diameter and the rotation speed of the screw. The rotation speed is defined in relation with the inclination of the screw, its length and the product characteristics (flowability, fragility). The stated rates correspond to standard screw design (standard helicoil diameter) with limited lengths. However, the length of the screw without intermediate bearing may be longer by increasing the shaft diameter, involving a flow rate decrease. This configuration is particularly suitable for applications with abrasive materials.

Motorization

Motors can be mounted for "pulled" or "pushed" operation.
 Note: when the installation allows it, the "pulled" operation design is recommended.

SCREW RATES

Ø	Ø Screw flight (mm.)	Ø Shaft (mm.)	Pitch (mm.)	Filling rate	Rotation speed	Capacity* in m³/h.	Max. length without bearing
114	100	48	67	80%	45.33333	0.88	3.300
139	120	48	80			1.65	3.300
168	150	60	100			3.23	3.800
219	200	60	133			8.29	3.500
273	250	60	167			16.78	3.000
323	300	114	200			26.32	3.500
406	350	114	233			43.67	3.500
457	400	114	267			67.00	3.500
558	500	114	333			135.02	3.500
660	600	168	400			226.81	3.500

* Figures are given for a filling rate of 80%, variable depending on the angle, the type of product and the size of the loading flange. The figures are indicative depending on the industry.

INSTALLED POWERS IN KW

Length	5 t/h.	15 t/h.	25 t/h.	40 t/h.	60 t/h.	90 t/h.	110 t/h.
1 m.	1.5	1.5	3	4	5.5	5.5	7.5
1.50 m.							
2 m.		2.2	4	5.5	7.5	9.2	
2.50 m.							
3 m.		3	5.5	7.5	9.2	11	
3.50 m.							
4 m.		2.2	5.5	7.5	9.2	15	
4.50 m.							
5 m.		3	7.5	9.2	11	18.5	
5.50 m.							
6 m.	4	7.5	9.2	11	22		
6.50 m.							
7 m.	3	9.2	11	15	22		
7.50 m.							
8 m.	4	11	15	15	22		
8.50 m.							
9 m.	3	15	15	15	22		
9.50 m.							
10 m.	4	15	15	15	22		
10.50 m.							
11 m.	3	15	15	15	22		
11.50 m.							
12 m.	4	15	15	15	22		
12.50 m.							
13 m.	3	15	15	15	22		
13.50 m.							

* Figures are given for information for a product with a density equal to 1.

3 POSSIBLE TRANSMISSIONS



1. Gearmotor direct coupling

2. Sprocket chain drive

3. Pulley/belt transmission

2 OPERATING MODES

The screw is used as conveying or extracting.



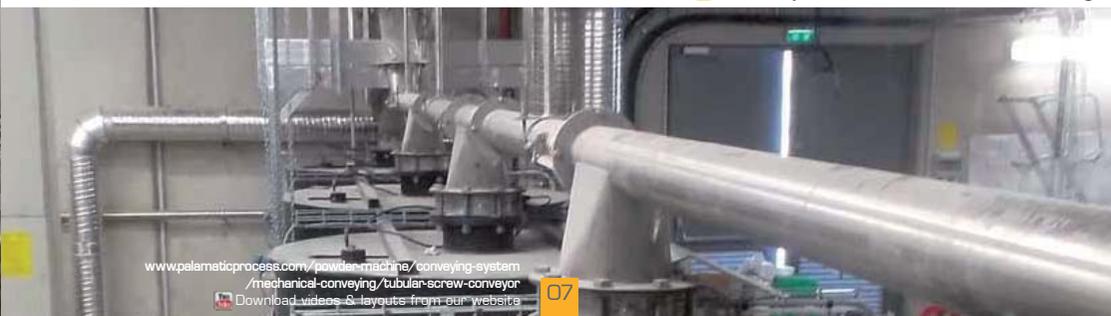
1. Conveying
 Used as a conveyor, the screw only ensures the conveying. It has an identical pitch along its entire length which is equal to the diameter of the screw flight. The conveying pitch is an elongated pitch which avoids the compaction of the material.



2. Extracting
 The extraction screw is implanted under hoppers and ensures the material dosing. It includes a pitch at the beginning of the helicoil and a conveying pitch. The extraction pitch is a tight pitch.

Extraction tight pitch

Multi-outputs screw with intermediate bearings



Tubular Screw Conveyor



Technical Specifications

2 TYPES OF BEARINGS

Depending on the type of the handled materials, the bearings can be flanged or detached.



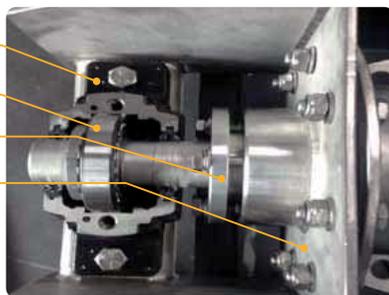
1. **Flanged bearings** for low pulverulent materials.



2. **Detached bearing** for dusty and abrasive materials. Air blowing can be added with a lantern ring system.

DETACHED BEARING: DETAILED DESIGN

- Pillow block housing
- Ball bearing
- Cable gland with teflon braid
- End flange with bearing support



INTERMEDIATE BEARINGS OR SHAFT OVERSIZING



1. The setting up of intermediate bearings enables the design of very long screws with a single engine.



2. The screws having an oversized shaft diameter do not require intermediate bearings and have significant conveying distance. For abrasive materials, alternative to the intermediate bearing is shaft oversizing.

Installations



Tubular Screw Conveyor

Easyclean



Easyclean Tubular Screw Conveyor

TECHNICAL SPECIFICATIONS

Theoretical capacity when filled at 100% with DN 168: 25 m³/h.
Inlet: round with smooth edge ; Ø equal to the Ø of the tube
Outlet: round with smooth edge ; Ø equal to the Ø of the tube
Motor: from 0.75 kW to 3.3 kW (possibility of adding a frequency converter)



FOR A QUICK AND EFFICIENT CLEANING

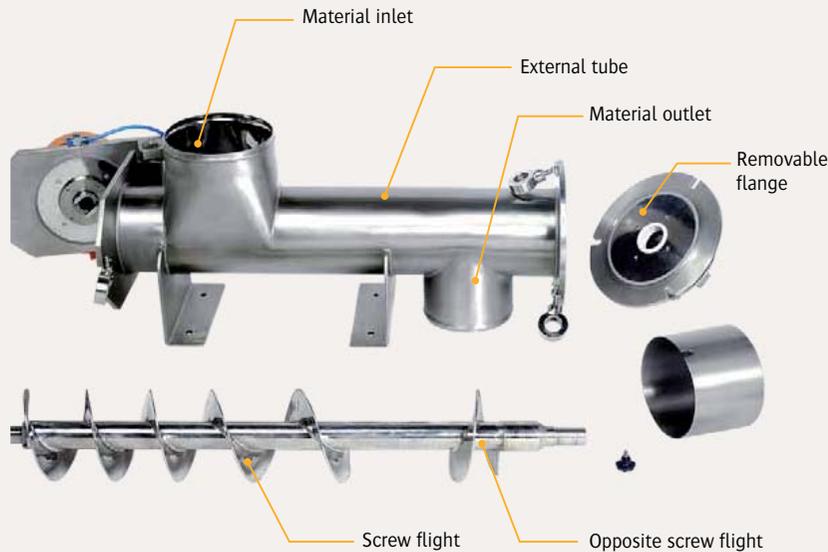
The total removal of the screw flight from Easyclean screw conveyors allows rapid and efficient cleaning of the whole device. The reduced amount of residual material is due to the small gap (flight clearance) between the helicoil and the tube (less than 5 mm).

Easyclean screw conveyors are suitable for all conveying applications and/or extraction of powdery or granular materials where rapid and easy access to the inside part of the trough is essential for frequent cleaning. The screws are particularly used in the food, cosmetic, pharmaceutical or chemical industries.

Equipment

TEST CENTER

Available



MINIMUM RETENTION AND FAST DISASSEMBLY DESIGN



Minimum residues inside



Easy maintenance thanks to the rapid extraction of the screw flight of the trough



Available with ATEX approval, zone 20/22



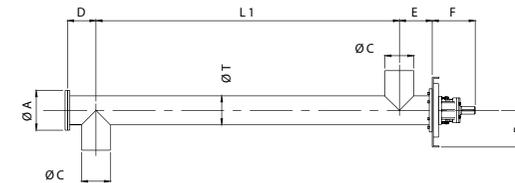
Minimum gap (flight clearance) between the tube and external screw flight (max. 5 mm.)

Advantages



Clean In Place (CIP): optimized design to meet special needs
 For food or pharmaceutical processes, screws can be fitted with a water injection bar for cleaning by splash or spray.

DIMENSIONS IN MM.



Models	ØT	ØA	B	ØC	D'	E'	F	L1
EASY 114	114	200	145	=	120	140	178	MAX 2,000
EASY 139	139	200	145		Ø T	120	140	
EASY 168	168	265	145	or		140	160	
EASY 219	219	315	185		custom made	160	180	
EASY 273	273	365	215			180	220	
EASY 323	323	435	245			220	220	

* Available for circular mouths

Options



Loading mouths with rectangular, circular or custom made sections



Inspection hatch

See all our options on pages 20 - 21



▶ MULTI-INLETS AND/OR MULTI-OUTLETS

Simultaneous supply of several points of feeding.

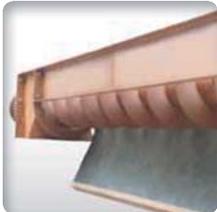
This configuration allows the apportionment of the material according to the operating rate.



▶ ROTATION CONTROLLER

Rotation control of the conveying screw.

This rotation controller is used for ATEX configurations.



▶ INSPECTION HATCH/OPENABLE BOTTOM

For integral discharge of the screw and easy cleaning.



▶ WIDENED LOADING MOUTHS

According to equipment used upstream and the solubility of the material treated, we offer different geometries of loading mouths (bell bottom screw).



▶ DETACHED BEARING

For perfect sealing and a maximum life span of the bearings, the shaft passage is provided by a set of braids and an air blowing system.



▶ INTERMEDIATE BEARING

It is used for important conveying lengths.

For configurations where screw conveyors have long lengths, one or more intermediate bearings are provided.



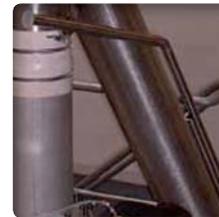
▶ TRANSMISSION

Depending on the dimensional constraints and the required rotational speeds, several transmission systems are suggested: gear motor, chain or belt.



▶ SPECIAL GASKETS

When processes or treated materials require it, PALAMATIC PROCESS incorporates special gaskets to ensure the compatibility of materials. A material certification is supplied with the equipment.



▶ CLEAN IN PLACE (CIP)

Ease of cleaning and maintenance

For food or pharmaceutical processes, screws must be fitted with a washing bar for cleaning by splash or spray.



▶ GAS AND DUST ATEX CONFIGURATIONS

Various options are available for installation in classified areas.

Rotation sensor, temperature sensor, turn rectified by machining, blowing nitrogen...

▶ GRINDING LINE

Company: Energy research laboratory

Material: Sawdust

Installation details: At the output of the big bag emptying station, the screening machine feeds the loading screw of the mill.

Sawdust is conveyed from the output of the centrifugal sieve to supply the process with a product free of foreign particles.



▶ RECONDITIONING IN BIG BAGS FROM SACKS OF 25KG

Company: Extinguishers recycling

Material: Fireproof powder

Installation details: Flexible screw conveyor to feed the big bag filling system from a manual bag dump station with an integrated vibrating screener.



▶ STORAGE LINE FOR GRANULATES IN MAGHREB

Company: National company specialized in the supply of aggregates

Material: Granulates

Installation details: The collecting screw conveyor supplies the main bucket elevator which ensures the feeding of the two conveying screws via a set of bypass and dropping tubes.

These screws load the silos fitted with filters and fluidized bottoms. This installation, located outside, provides high production capacities and guarantees very high operating rates due to its robust design.



▶ JUICE PRODUCTION PROCESS

Company: Fresh products manufacturing plant

Material: Raw food material in powder

Installation details: Trough screw conveyor with a capacity of 5t./h., manufactured in 304L stainless steel.

The screw conveyor is positioned under a big bag and sack emptying station and feeds a disperser. The screw is connected to the mixer with a flexible fitting. It has a large input section (bell bottom type).



▶ MIXER FEEDING FROM A BIG BAG EMPTYING INSTALLATION

Company: Manufacture of glues and adhesive products

Material: Resin

Installation details: A big bag emptying station and a conveying screw are implanted on load cells to ensure the filling of the mixer. By its design, the screw is located on a rotating flange allowing its release and thus the full opening of the mixer.



▶ HYGIENIC PACKAGING OF BABY FOOD PRODUCTS

Company: Baby milk manufacturer

Material: Powdered milk

Installation details: Conveying screw with high flow rate to feed an automated big bag filling unit.

