



SOLUTIONS for Mechanical Conveying

— SCREW CONVEYOR

— BELT CONVEYOR

— AERO CONVEYOR

— VIBRATING
CONVEYOR

— BUCKET ELEVATOR

— TRUCK LOADING
SPOUT



Palamatic
PROCESS >>> machines • engineering

Powder Handling Solutions

CONTENT



Means that the equipment is available for testing at PALAMATIC PROCESS

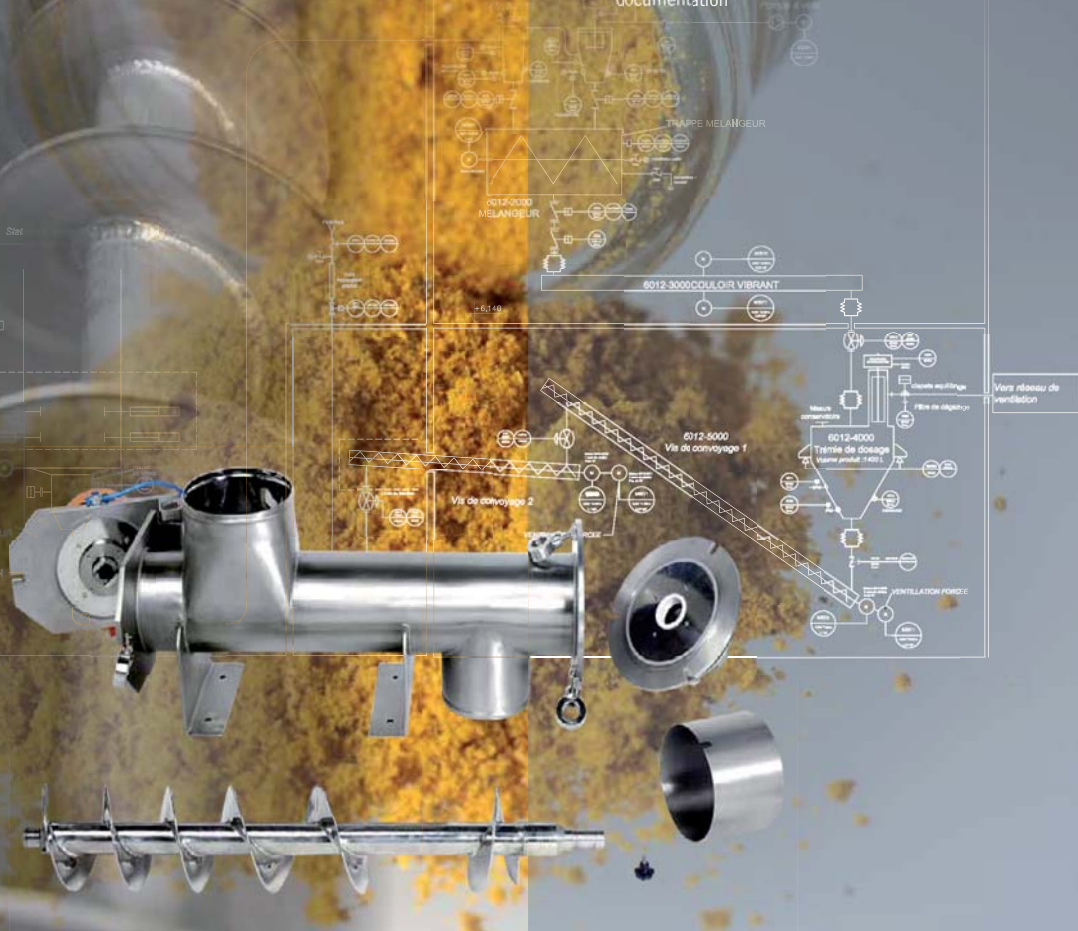


Means that the equipment can be installed in ATEX zone



Means that design and options can be customised

PALAMATIC PROCESS reserves the right to make changes in the design of the facilities listed in this commercial documentation



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Our Solutions

PALAMATIC PROCESS HAS DEVELOPED A COMPLETE RANGE OF MACHINES FOR THE CONVEYING OF YOUR MATERIALS

 <p>Tubular screw conveyor</p> <ul style="list-style-type: none"> Conveying and dosing <p>Page 04</p>	 <p>Trough screw conveyor</p> <ul style="list-style-type: none"> Conveying, dosing, extracting and distributing <p>Page 12</p>	 <p>Belt conveyor</p> <ul style="list-style-type: none"> Continuous conveying of bulk materials at very high rates <p>Page 26</p>	 <p>Aero conveyor</p> <ul style="list-style-type: none"> Chain or cable conveying for heavy or fragile materials <p>Page 28</p>	 <p>Vibrating conveyor</p> <ul style="list-style-type: none"> Contained conveying for fragile materials <p>Page 30</p>	 <p>Bucket elevator</p> <ul style="list-style-type: none"> Vertical conveying of bulk materials <p>Page 32</p>	 <p>Truck loading spout</p> <ul style="list-style-type: none"> Filling of tankers and dump truck <p>Page 36</p>
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PALAMATIC PROCESS offers machines for the conveying of your granular and powdered materials. The selection of equipment is made according to the treated product, the conveying distance and the desired capacity. Thanks to its test center and its many facilities in operation, PALAMATIC PROCESS has gained a solid and recognized experience in the development of technologies for handling powders.

Comparative table of the different technologies

LEGEND: ●●● Excellent ●● Good ● Medium ■ Not applicable

	Capacity	Conveying distance	Fragiles materials	Clogging material	Material retention	Ease of implementation	Containment
Tubular screw conveyor	●●	●	●●	●●●	●●	●	●●●
Trough screw conveyor	●●	●	●●	●●●	●●	●	●●●
Belt conveyor	●●●	●●●	●●●	●●	●	●	■
Aero conveyor	●	●●	●●	●	●●	●●	●●●
Vibrating conveyor	●	●	●●●	■	●●●	●	●●●
Bucket elevator	●●●	● <i>Vertical only</i>	●	●	●	●	●

Our engineering department ensures the integration of equipment into production lines or on various machines.

Tubular Screw Conveyor

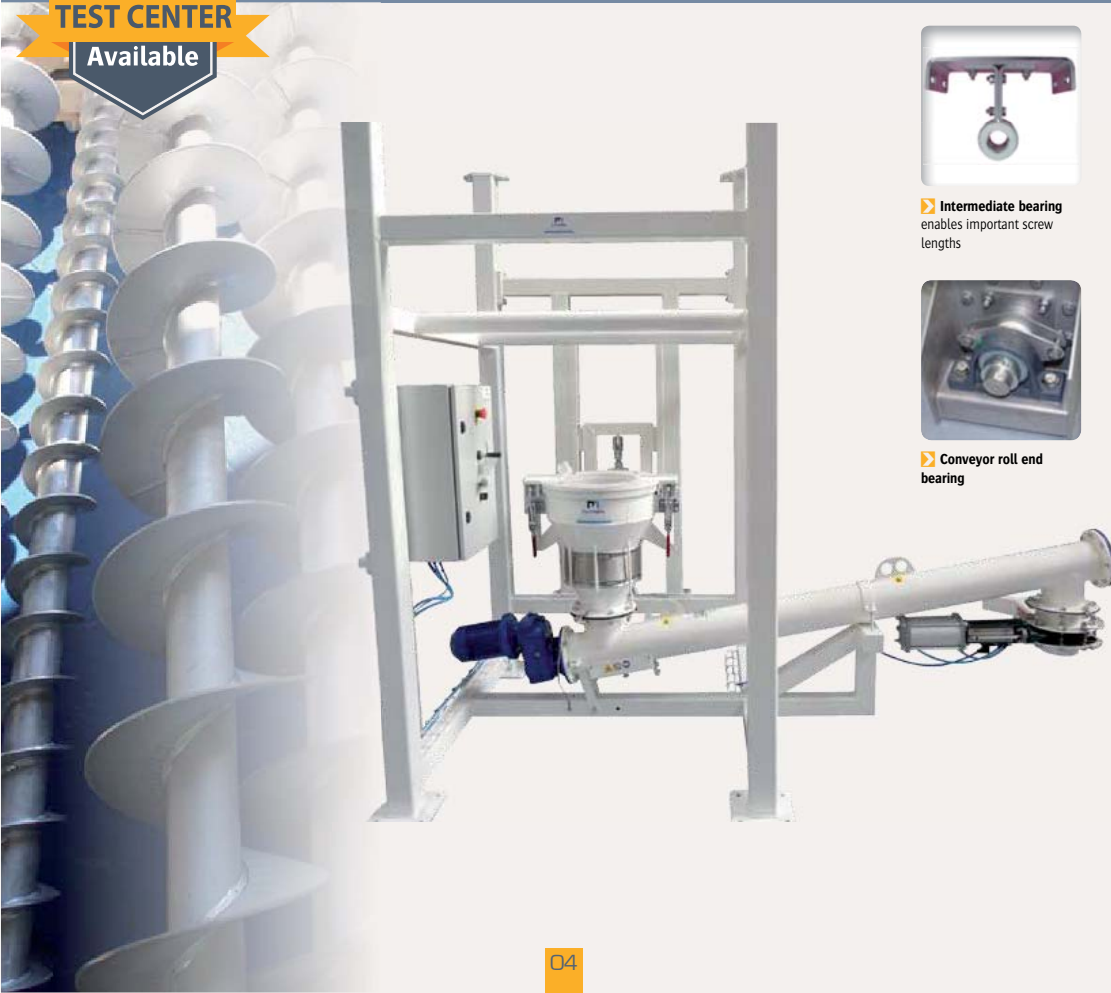


Tubular Screw Conveyor

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.



▶ **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**

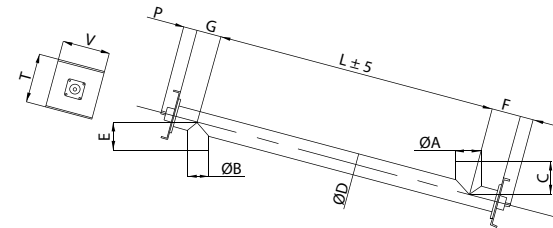


▶ **Modular design**

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		
3.50 m.							
4 m.		2.2	5.5	7.5	11		
4.50 m.							
5 m.		3	7.5	9.2	15		
5.50 m.							
6 m.	4	7.5	11	18.5			
6.50 m.							
7 m.	3	9.2	15	22			
7.50 m.							
8 m.	4	11	15	22			
8.50 m.							
9 m.	3	15	22				
9.50 m.							
10 m.	4	22					
10.50 m.							
11 m.	3	22					
11.50 m.							
12 m.	4	22					
12.50 m.							
13 m.	3	22					

* 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.

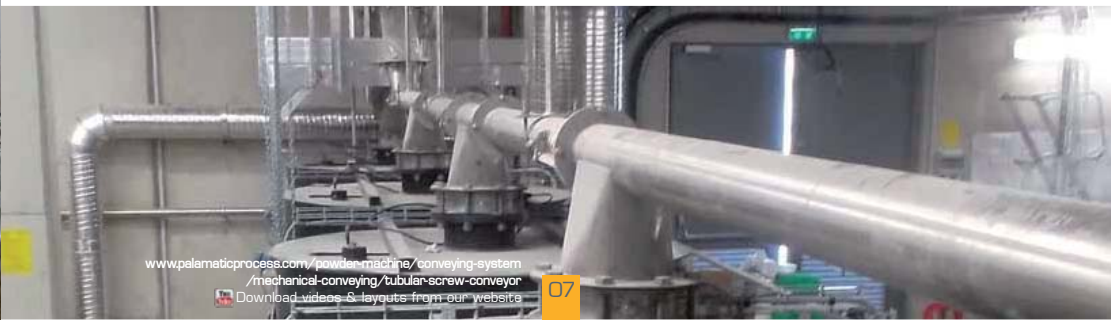


2. Extracting

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.



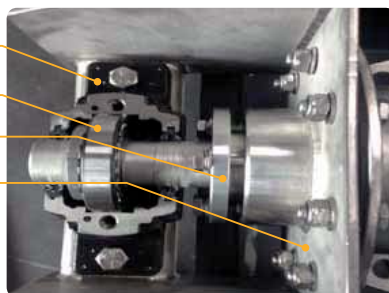
1. **Flanged bearings** for low pulverulent materials.



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

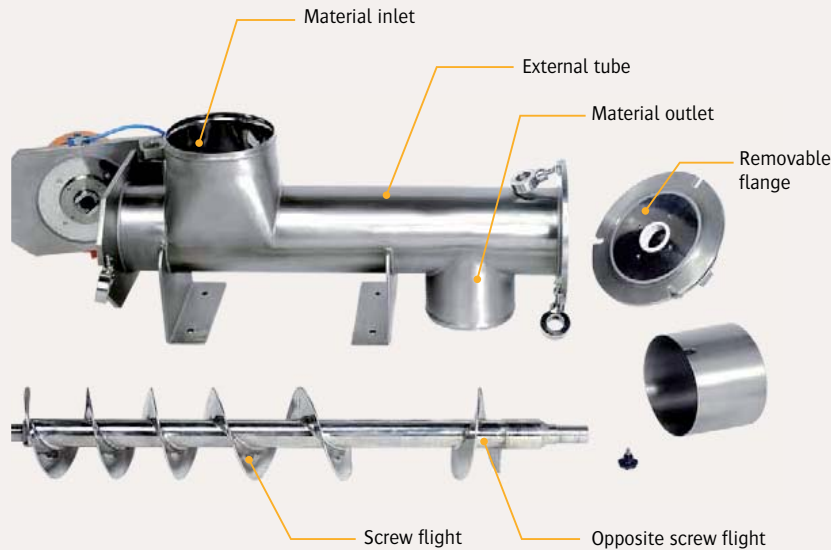
The total removal of the screw flight from Easyclean screw conveyors allows rapid and efficient cleaning of the whole device. The reduced amount of residual material is due to the small gap (flight clearance) between the helicoil and the tube (less than 5 mm).

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.)

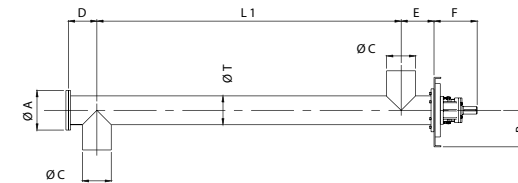
Advantages



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	220		180	220	
EASY 323	323	435	245		220	220	217-260-268	

* Available for circular mouths

Options



Loading mouths with rectangular, circular or custom made sections



Inspection hatch

See all our options on pages 20 - 21

Trough Screw Conveyor



Capacity: up to 243 m³/h.

HANDLING OF BULK GRANULATED OR POWDERED PRODUCTS

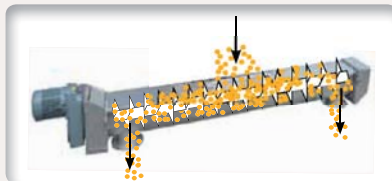
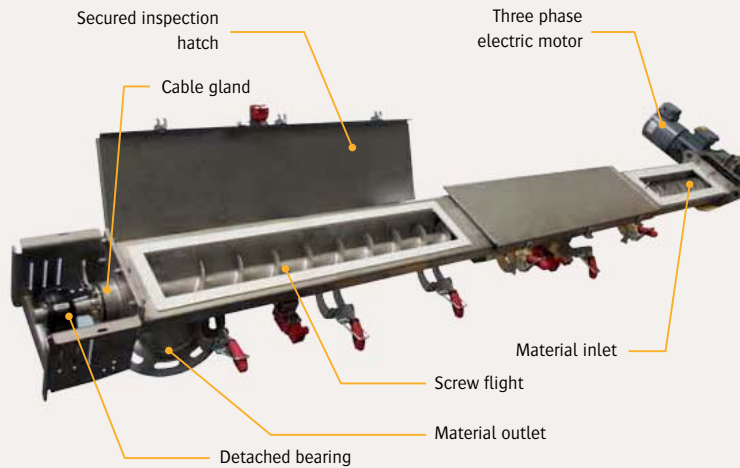
The PALAMATIC PROCESS trough screw conveyor allows the handling of bulk or delicate powders, thanks to its low speeds of operation. This mechanical screw conveying system is widely used in industries such as food & feed, plastics industry or chemistry, environmental technology, cement, lime and plaster, as well as mining. Depending on the application, the inlet and outlet of the screw can be customized to respond to the constraints of the equipment/materials.

TECHNICAL SPECIFICATIONS

Manufacturing: mild steel, stainless steel 304L
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
ATEX zone 20/22
Section: U or V trough section
Length: 1 to 13 m.
Transmission type: direct, belt or chain
Operating temperature up to 60°C (higher temperature on request)



This equipment is suitable for dosing operation



Example of screw with 2 directions of rotation with one central rectangular inlet with two opposed round outlets.

3 DESIGNS

Depending on the type of application, the designs differ by the plate thickness and the diameters of the shafts.

- Light duty** is used for conveying powdery or granular materials in the sectors of food & feed production, plastic, fine chemicals...
- Heavy duty** is used in woodworking industries, chemicals, water treatment plants...
- Very heavy duty** is mainly used in industries dealing with cement, lime or plaster and mines.



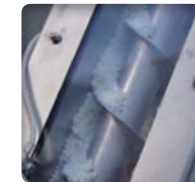
Multi-outlets trough to feed several receiving points



Openable hinged bottom to completely drain the screw



Different types of helicoil to allow the conveying of different materials

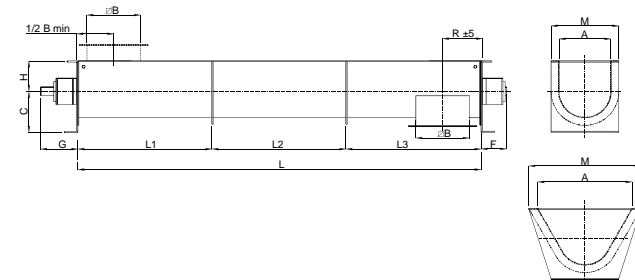


Through with hinged cover with security hatch to easily access to the inside of the trough or plexiglass

Advantages



DIMENSIONS IN MM.



Ø	A (U section)	A (V section)	B	C (U section)	C (V section)	F	G	H (U section)	H (V section)	M (U section)	M (V section)	R
100	-	175	175	-	145	114	156	-	115	-	261	170
120	-	175	175	-	145	114	156	-	115	-	261	170
150	175	375	175	145	145	124	182	115	175	261	481	170
200	225	425	225	185	185	124	182	135	200	311	531	195
250	275	525	275	215	215	143	225	160	225	361	651	220
300	325	525	325	245	245	151	233	195	250	433	653	260
350	375	625	375	275	275	151	233	235	270	483	753	290
400	425	730	425	305	305	162	267	270	290	533	898	340
500	525	830	525	380	380	180	310	340	340	653	998	390
600	625	1.040	625	465	465	180	310	420	420	753	1.248	440

Trough Screw Conveyor

Technical Specifications

3 POSSIBLE TRANSMISSIONS



1. Gear motor direct coupling

2. Sprockets chain drive

3. Pulley or belt transmission

2 OPERATING MODES

The screw is used as conveying or extraction.



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. Extraction

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

Extraction tight pitch

2 TYPES OF BEARINGS

Depending on the type of the handled materials, the bearings can be plated 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.

Installations



Trough Screw Conveyor

Capacities

SCREW FLOW RATES

Ø	Screw flight diameter (mm)	Shaft diameter (mm.)	Pitch (mm)	Filling rate	Rotation speed	Flow rate* in m³/h.	Flow rate* in kg/h.	Max. length without bearing
100	100	48	67	80%	48.5	0.94	1,360.24	3,500
120	120	48	80			1.77	2,565.50	3,500
150	150	60	100			3.46	5,010.75	4,000
200	200	60	133			8.87	12,867.11	4,000
250	250	60	167			17.95	26,025.85	3,800
300	300	114	200			28.16	40,830.45	5,750
350	350	114	233			46.72	67,740.38	5,500
400	400	114	267			71.68	103,929.48	5,250
500	500	114	333			144.45	209,447.55	5,000
600	600	168	400			242.65	351,840.49	6,000

* Figures given for a filling rate of 80%, variable depending on the angle, the type of material and the size of the loading flange.

CASE STUDY: PETROCHEMICAL INDUSTRY, BARITE PROCESS

Loading of wagons with powders (rate 600 sacks/h., 30 t./h.)

The treated material is barite of high density and abrasive, used as binding agent in the drilling muds in order to facilitate the work of the bit.

The installation consists of a tube lifter for sacks with a 7-meters long inclined belt and an automatic sack opening machine. Due to the abrasivity of the product, the machine is fitted with a centralized lubrication system and the cutting blades with a diamond coating to prevent premature wear.

A dust collector, with a declogging device for fines, is installed directly on top of the machine.

It allows a confined circulation of fines in closed circuit.

The obtained discharge coefficient is of the order of 99.97%.

The sack, once emptied, is discharged to a polyethylene sheath ensuring a better containment of the operation.

Barite is discharged through a vibrating chute with a 10 mm grid to two 6 meters long screw conveyors.

The screws are mounted in series in order to prevent intermediate bearings and to limit the preventive maintenance due to abrasion.

At the extremity of the screw, a truck loading sleeve allows filling the wagons and the sending of the material to the processing center before routing it to drilling platforms.



ATEX



ATEX

ATEX SAFETY: SPECIFICATIONS AND BENEFITS



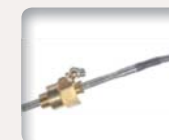
SPECIFIC CHARACTERISTICS OF ATEX SCREWS

Conveying crews can be implemented in ATEX gas and dust areas.

- **Rotation sensor:** located at the shaft end, it controls the proper screw operation.
- **Temperature sensor:** it operates on cable glands to avoid hot spot.
- **Helicoil rectified by machining:** the gap between the helicoil and the tube is ensured by a rectification of the diameter of the helicoil
- **Nitrogen blowing:** performed at the level of cable glands, it may be necessary according to the ATEX characteristics of the location area.



Rotation sensor



Temperature sensor

The peripheral speeds are necessarily less than 1m/s

ATEX REGULATIONS: AUDIT AND COMPLIANCE

In production processes, industrialists are very frequently faced with the explosive nature of several materials (powder, gas, liquid).

When the atmosphere is explosive, a small spark is enough (e.g. that of an electric switch or from the mechanical heating of a part of the machine) to cause an accident or a disaster.

For many years, authorities and industries have worked on developing safety rules governing work conditions in such dangerous environments: explosive atmospheres.

PALAMATIC PROCESS provides its expertise to classify your risk zones based on nature, frequency or duration of the presence of an ATEX regulation.

Today, PALAMATIC PROCESS delivers to its customers ATEX installations certified by notified organisms (Inéris, LCIE...).

PALAMATIC PROCESS has developed in a standard way some equipment conforming to ATEX 0-20 / 1-21 / 2-22.

Also, our engineers perform the zoning and drafting of risk analysis on new equipment and facilities.

PALAMATIC PROCESS ensures safe operation and full compliance with these standards.

Screw Conveyor

Custom Made



Custom Made
Screw Conveyor

Custom Manufacturing

SCREW CONVEYOR ADAPTED TO ALL NEEDS

The engineering office PALAMATIC PROCESS offers customized solutions that meet the needs and expectations of its customers. A detailed review of your specifications will be carried out to design mechanical conveying equipment in phase with your industrial requirements.



POSSIBLE CONFIGURATIONS

Heating and/or cooling screw

This type of screw brings, in a single equipment, conveying and heat exchange functions for products in bulk.

Fed continuously, the screw allows cooling, drying or heating of pasty, liquid, powdered or granulated materials.

It consists of a double casing auger and a rotor with empty screw flight in which circulates a heat transfer fluid (water, thermal oil).

A design with multiple intersecting rotors allows the increase of the exchange surfaces and self-cleaning of the screw flight.

Double casing screw



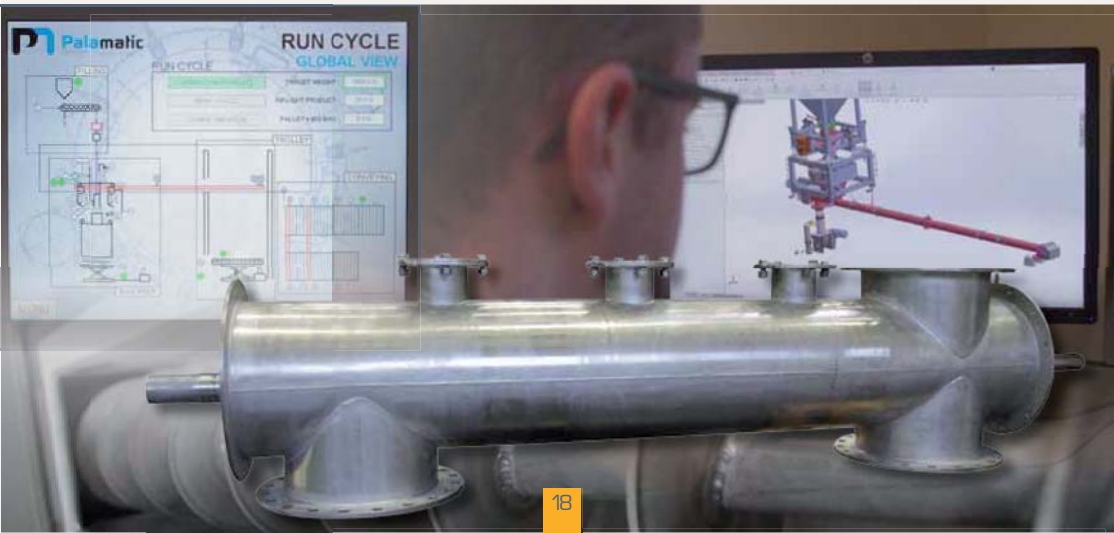
Mixing screw

Mixing screw for conveying and mixing of your powders.

The mixing screw consists of a single or double paddle rotors and allows crumbling and brief mixing of the conveyed products.



Installations





▶ 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.



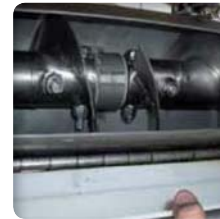
▶ WIDENED LOADING MOUTHS

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.



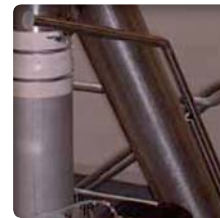
▶ TRANSMISSION

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...

Flexible Screw Conveyor



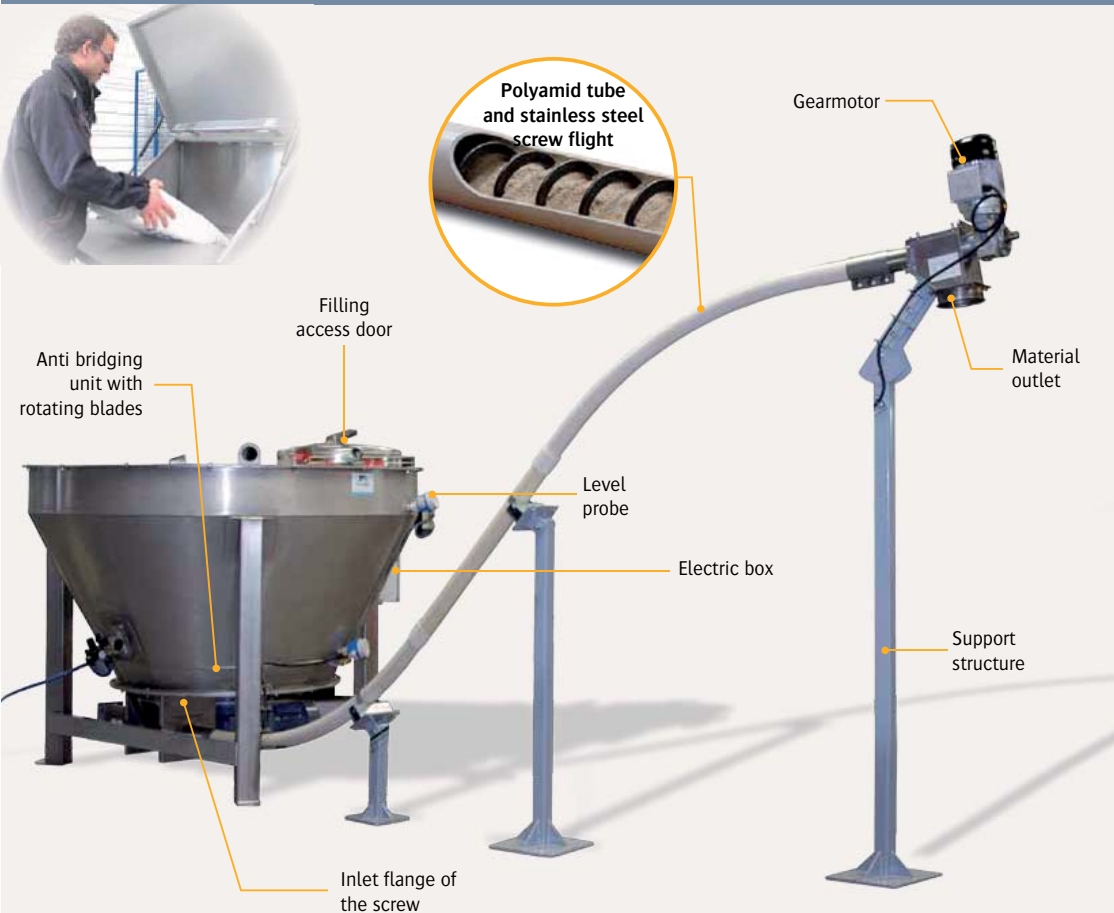
MECHANICAL FLEXIBLE SCREW TO AVOID OBSTACLES

The flexible screw is used to carry powders, granules or pellets. The compatibility of materials conveyed must be validated by PALAMATIC PROCESS. By their mode of operation and design, these screws impose specific implementation recommendations. The advantages of the flexible screw are its compact size and its flexibility of installation.

! Because of the high rotational speeds (of about 900 rpm), this type of screw can not convey fragile products and cannot be operated if it is empty.

TECHNICAL SPECIFICATIONS

Manufacturing: screw in stainless steel and tube in polyamid
Conveying rate: 100 to 7,000 liters/h.
Slope: 0 to 6 meters
Offset: 1 to 20 meters
Conveying tube: Ø 37 to 90
Engine: 220/400V three-phase



▶ **Tube manufactured in semi-rigid polyamid** with excellent abrasion resistance, vibration absorption and certified for food products.



▶ **Flexibility of the conveyor** which goes around above, below or laterally any machine already in place.



▶ **Protection against environmental moisture:** ideal for dehydrated or dried products.



▶ **Easy maintenance** to remove residual material from the conveyor by rotating the device in the other direction.

Advantages



RANGE OF FLEXIBLE SCREW CONVEYORS

Model	Capacity kg/h.	Minimum bending radius in meters*	Tube: internal Ø x external Ø
37	100	2	37 x 43
44	400	2.5	44 x 51
55	800	3	55 x 63
67	2,000	4	67 x 80
80	5,000	5.5	80 x 90
90	7,000	7	90 x 100

Note: the obtained rates depend on the density and characteristics of the product as well as the length and elevation of the screw.
 * The specificities of setting up and screws curves must be validated by the PALAMATIC PROCESS engineering design office.

[+] Note

On configurations with long lengths of screws, a siding must be provided at the bottom of the screw to allow the loosening of the screw.



▶ 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.



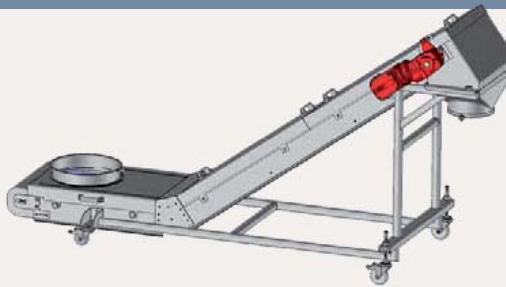
Belt Conveyor



Belt width: from 300 to 1,200 mm.
Elevation: according to the application

SECURE CONVEYING OF YOUR LOADS

Industrial conveyor for handling bulk products. It is suitable for applications dealing with high flow rates. Modular system, the length and width of the belt are determined according to your implementation constraints and the material conveyed.
 Various domains of application: harbour, quarry, concrete mixing plant, construction, water treatment station, recycling facility...



2 VERSIONS

Version for food materials

The belt is manufactured in food-grade rubber and comes with a food grade certificate.
 The stainless steel structure can be designed in tubular shape or with open sections to reduce retention and meet the hygiene requirements.

Heavy duty version

Specially designed for high flow rate conveying, the thick rubber band ensures the shifting of all types of products.
 This conveyor enables various designs with the ability to integrate many options: cowlings, dedusting, weighing operations, scrapers, strands...



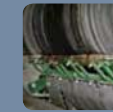
TECHNICAL SPECIFICATIONS

Conveyor with smooth belt or rafters
 Adjustable bearing for belt tension
 Driven by drum motor or gearmotor

Belt speed from 0.63 m./s. to 2.5 m./s.
 Three phase motor power from 0.55 kW to 5.5 kW

OPTIONS AVAILABLE

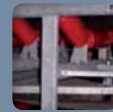
- Rotation controller
- Electrical pre-installation
- Adjustable height of the belt
- Belt alignment sensor
- Cowling with suction and depressurization
- Reception trough



Multi-blades scrapper



Strand plates and flaps



Cleaning of the inside of the belt



Spout on head or with cuff



Rotation controller



Modular system to fit your loads and implementation constraints



Belt joining system: welding or clip



Belt tensing system

Advantages



TECHNICAL DATA

Data valid for heavy versions conveyor

Width of belt	mm	300	400	500	650	800	1,000	1,200
Maximum power - 6 meters	kW	0.55	1.1	4	5.5	5.5	5.5	5.5
Structure height	mm	260	260	300	300	300	300	300
Structure width	mm	420	520	740	890	1,040	1,240	1,440
Ø drum head (max. standard)	mm	160	160	320	320	320	320	320
Ø drum foot	mm	135	135	220	220	220	220	220
Ø roller	mm	60	60	60	60	60	60	60

Aero Conveyor

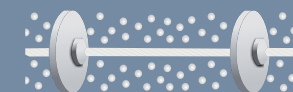
Ex AVAILABLE CUSTOM MADE

Aero Conveyor

Capacity: 1 to 40 m³/h.
Elevation: up to 10 m.
Conveying length: up to 50 m.

INLETS/OUTLETS

The inlet of the material is located at the angle gear pulleys or directly on the conveying tube. The inlets can be multiple. The outlets for the material are located at the the pulleys or directly on the tube with valves that are specific to the system.



CONVEYING OF BULK MATERIALS REQUIRING FLEXIBILITY OF IMPLEMENTATION

The conveyor is tightly designed through the integration of tubes and angle gears. The disks, manufactured in synthetic material, are mounted at regular intervals along the chain or the cable. The engine and a driving wheel indexing disks rotate the chain or the cable. This robust design enables the conveying of a wide variety of products, whether heavy or sticky; as well, discs ensure the self-cleaning of the system.

Equipment

TEST CENTER

Available

Advantages



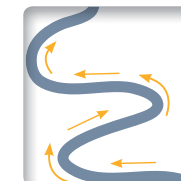
Self-cleaning disk system



Compliance with crumbly and fragile goods



Conveying of materials with heterogeneous density and particle size



Flexibility of implementation



Notched angle gears wheel for discs indexing and setting in motion of the cable



Oily and sticky products are perfectly compatible with this type of equipment. Low speeds, combined with the immobilization of materials between the disks, are a major benefit for reducing the attrition of fragile products.



Chain or cable driving (alternative with direct gear motor)



PALAMATIC PROCESS INSTALLATION FOR CATALYSTS SAMPLING

2 aero conveyors ensure the loading of a sifter (scraping disks manufactured in food grade nylon)
 Maximum rate: around 5m³/h. - Vertical conveying length: 3 m. - Buffer hopper capacity: 300 litres



CAPACITIES AND SPEEDS

Tube Ø in mm	Capacity in m ³ /h.	Disk movement speed in m./s.
88.9	0.5	0.02
114.3	to	to
139.7	40	0.45
168.3		
219.1		

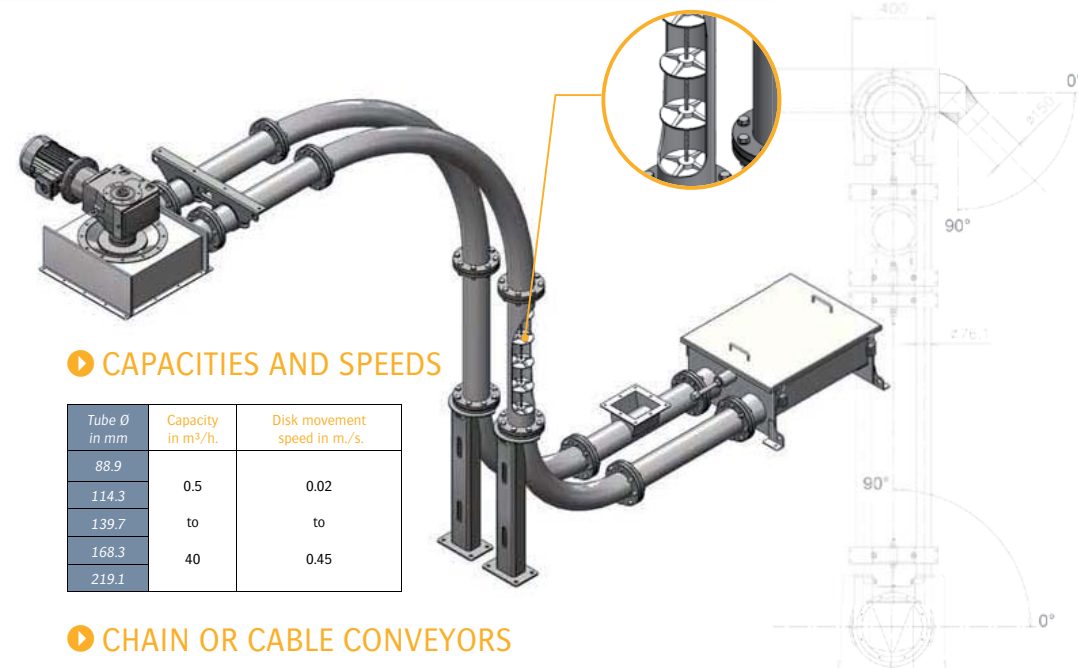
CHAIN OR CABLE CONVEYORS



The use of the chain is related to the power implemented and the length of the conveyor.



The aero conveyor engineering using cables allows the implantation of the equipment in food grade industries.



Vibrating Conveyor



Capacity: up to 20 m³/h.
Elevation: 8 degrees max.
Applications: conveying and dosing
Manufacturing: mild steel/stainless steel

VIBRATING CONVEYOR FOR BULK MATERIALS CONVEYING AND DOSING

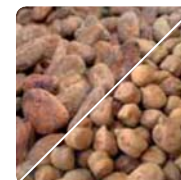
By controlling the vibration amplitude, the conveying is performed with gentle handling. The complete absence of mechanical parts in contact with the material allows hygienic applications and simple cleaning phases. The vibrating conveyor is the ideal solution to ensure hygiene and soft handling of fragile products.

OPERATING MODE

The vibrating conveyors are installed in bulk material handling processes to ensure the dosing or the constant feeding of a machine. All versions use the same principle: a trough fitted with a vibrator for the transport and that is suspended at four points, insulating the conveying device from the structure.



➤ **Dosing or conveying applications**



➤ **Ideal for high particle size materials**



➤ **Respect of delicate materials**



➤ **Not much mechanics, low maintenance = easy cleaning**

Advantages



➤ **Extremity hatch for inspection and cleaning**



➤ **Installation on springs to ensure optimum insulation with high amplitude**



➤ **Vibrating motor set on the tube with reinforcing barrel for power transmission**

SETTINGS



➤ **Microdosing**
For sprinkling and dosing applications



➤ **Custom made manufacturing**
Example: capsules calibrator



➤ **Trough manufacturing**
Open or tight trough



➤ **Implantation**
Suspended or on the floor trough

SILENT BLOCK AND SILENT BLOCK WITH SPRINGS

Depending on the application, the stiffness and the damping system are adapted.

Standard devices:

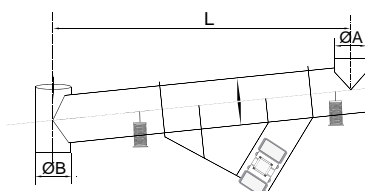


➤ **Silent block**

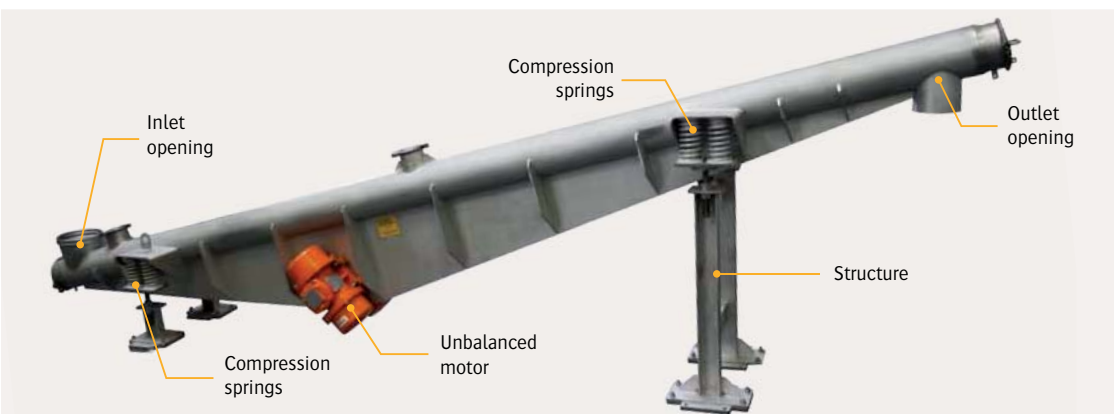


➤ **Springs**

DIMENSIONS



Tube Ø (mm.)	Length		A Max. inlet Ø (mm.)	B Max. outlet Ø (mm.)	Max. degree	
	Min.	Max.			Upwards	Downwards
88.9	300	2,000	150	150	8°	15°
114.3	300	3,000	200	200	8°	15°
139.7	500	3,000	250	250	8°	15°
168.3	500	4,000	250	250	8°	15°
219.10	500	5,000	250	300	8°	15°
273.0	500	6,000	300	350	8°	15°
323.9	750	6,500	375	400	8°	15°



2 TYPES OF VIBRATING MOTORS



1. Magnetic vibrating motor
Stroke from 0 to 4 mm.
Strength from 1 to 1.6 tons



2. Electric vibrating motors mounted in pairs
Stroke from 0 to 20 mm.
Strength from 1 to 5 tons

Bucket Elevator



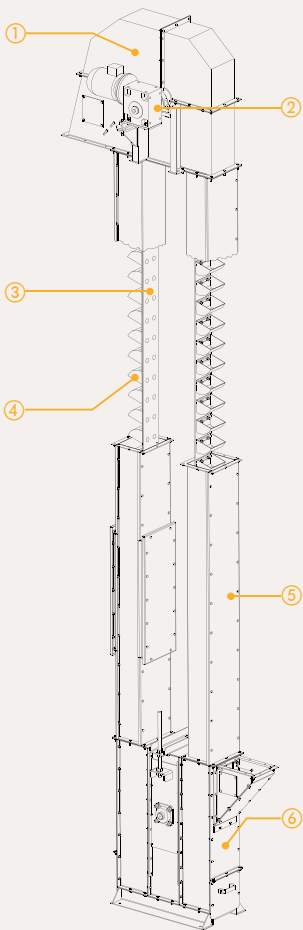
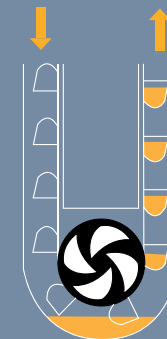
Capacity: up to 174 m³/h.
Elevation: 3 to 45 meters
Objective: to ensure the vertical conveying of solid bulk materials

FOR HEAVY VERTICAL HANDLING OR HIGH FLOW RATES

Bucket elevators are widely used in many sectors such as the fertilizer industry, cement plants, agriculture and quarries.

TECHNICAL SPECIFICATIONS

- Case:** galvanized or stainless steel
- Roller diameter:** 250 to 610 mm.
- Buckets:** plastic, mild steel, 304L/316L stainless steel
- Belt alignment sensors**
- Inspection hatches on head and foot section**
- Rotation controller**
- Integrated security device:** anti-return system



- 1 Head**
 - . Self-centring, steel or stainless steel, dual-cone drum covered with rubber or squirrel-cage
 - . Offset flange bearing
 - . Belt offset sensor
 - . Anti-wear protection
 - . Connection to dust collector
 - . Deflector
 - . Optional maintenance hatch
- 2 Motorization**
 - . A standard chain or direct coupling with pendulous mounting
- 3 Belt**
 - . Rubber belt
 - . Clamping jaw link
 - . Very long elongation
 - . Reinforced belt suitable for various materials
 - . Class of resistance
 - . Possible options: food grade belt, resistance to temperature, resistance to oil
- 4 Buckets**
 - . HPDE manufacturing
 - . Mild steel/stainless steel or antistatic nylon manufacturing available
 - . Bucket capacity from 0,1 to 8,6 liters
- 5 Sheaths**
 - . Manufactured in standard lengths of 2 m. bolted with spacer tool
 - . Space between the sheaths from 0.5 to 2 meters.
 - . Integration of explosion proof panels
- 6 Loading base**
 - . Access hatch for cleaning
 - . Belt tensioning system by screw with integrated sealing
 - . Mild steel or stainless steel manufacturing
 - . Abrasion protection
 - . Connection to dust collector possible
 - . Self centering standard return drum in squirrel cage
 - . Rotation sensor
 - . Clogging detector



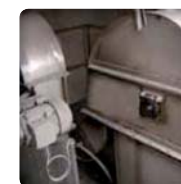
Quick assembly



Explosion vent



Safety of operation



Head, foot and sheaths bolted: easy installation and maintenance operations

Advantages

APPLICATIONS

Buckets elevators are designed for the transportation of inert fine materials, such as calcium carbonate, lime, limestone, dried sludge or sand. These dry materials with particle size less than 5 mm. are abrasive and fluid and do not tend to condense.

They have angles of repose between 20° and 44° and their specific weight varies, mostly between 0.4 and 1.8 kg/dm³. Buckets elevators are manufactured to operate at low speeds and are made up of modular standard components. They are mainly used in storage warehouses, in dry materials construction production plants and asphalt or in the preparation and production of ceramics, in chemical and petrochemical industry.

TECHNICAL DETAILS



Elevator head



Elevator foot



Squirrel cage design
Prevents belt wear and patinating

Bucket Elevator

Dimensions

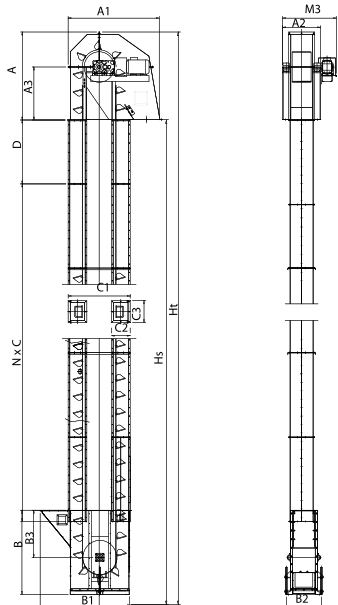


▶ OPERATING MODE

The material is introduced through a hopper fitted in the foot of the elevator. The material is continuously removed by the buckets. They have a suitable shape and are fixed equidistantly on a rotating band. The buckets are emptied through a discharge mouth by means of centrifugal force and by a deflector included in the head of the elevator. The belt rotation speeds vary between 1,7 and 3,1m./sec. depending on the abrasiveness of the treated material. The elevators are designed in steel or stainless steel. Anti-wear protections on the inlet and outlet can also be provided.

▶ BUCKET ELEVATORS - EG

TYPE	EG08	EG09	EG11	EG20	EG21	EG29	EG30	EG32	EG39	EG40	EG41	EG42
m ³ /h.	4	8	13	19	27	38	52	68	87	114	135	174
Rollers Ø (mm.)	250	250	320	400	400	400	400	500	500	500	610	610
Sheath section	145*145	145*145	186*166	236*200	236*200	300*250	300*250	340*280	430*340	430*340	525*340	525*340
A	742	862	950	1.172	1.172	1.276	1.276	1.497	1.728	1.728	1.835	1.835
A1	822	822	1.028	1.224	1.224	1.422	1.422	1.632	1.896	1.896	1.980	1.980
A2	335	335	390	440	440	620	620	700	810	810	962	962
A3	460	460	580	700	700	740	740	900	1.020	1.020	1.095	1.095
M3	530	530	640	713	713	890	890	1.030	1.140	1.140	1.370	1.370
B	753	753	923	1.104	1.104	1.320	1.320	1.437	1.670	1.670	1.806	1.806
B1	812	812	941	1.135	1.135	1.372	1.372	1.504	1.746	1.746	1.885	1.885
B2	310	310	384	432	432	490	490	586	700	700	782	782
B3	400	400	450	550	550	720	720	750	790	790	1.000	1.000
C	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
C1	548	548	674	822	822	922	922	1.074	1.196	1.196	1.300	1.300
C2*C3	209*209	209*209	230*250	264*300	264*300	336*386	336*386	364*424	426*516	426*516	426*611	426*611
D	500-1.500	500-1.500	500-1.500	500-1.500	500-1.500	500-1.500	500-1.500	500-1.500	500-1.500	500-1.500	500-1.500	500-1.500
N	May vary depending on the height											



▶ OPTIONS ET ACCESSORIES

- ATEX II3D T4 certifications
- 304/316 stainless steel manufacturing
- Suitable for high temperatures (50-120°C)
- Rotation sensors
- Anti-patinating sensors
- Certified explosion proof panels
- Inspection hatch on top of elevator
- Connection to dedusting unit
- Anti-wear protection on inlet and outlet
- Buckets and belts of different materials and characteristics
- Self-supporting structure to support the elevator and allow access to maintenance

INSTALLATION EXAMPLE: MANUFACTURING OF DeNO_x SOLUTIONS

Customer: DeNO_x solution supplier for thermal power plant in order to reduce emission of nitrogen oxide.

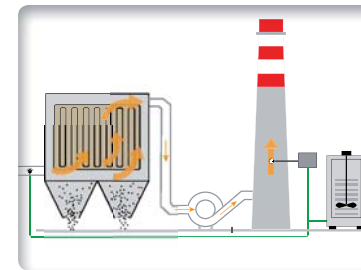
Implementation: Caribbean

Objective: to design a skid for preparation of liquid urea from bulk urea to be delivered in tanktainer.

PALAMATIC PROCESS Equipment:

- Urea is delivered in bulk and is then repackaged in big bags and dosed into the dissolving tank
- Feeding and dosing are ensured by a bucket elevator combined with a weighing hopper
- Demineralized water is pumped, filtered and heated by an aerothermal group with heat exchanger
- The endothermic reaction is controlled and regulated by a heating group. The DeNO_x solution passes through a filter to ensure the safety of the downstream equipment
- Business transactions are carried out by calibrated and controlled flowmeters

Results obtained: daily delivery of tanktainers allows the thermal power plant to inject liquid urea to reduce nitrogen oxide emissions.



Truck Loading Spout



Capacity: up to 250 m³/h.
Inlet opening size: 300 mm.
Manufacturing: neoprene/hypalon, kevlar, food grade neoprene

LOADING OF POWDERED OR GRANULATED MATERIALS INTO TANKERS OR OPEN LORRIES

Telescopic truck loading spouts are designed for dust-free loading of tankers, open lorries and wagons. These loading systems have internal cones to canalize the flow of material and an external double bellows for dust extraction. At the bottom end of the sleeve, a ballasted and coated cone ensures a dust proof application.

TECHNICAL SPECIFICATIONS

Manual winch or electric lifting
 Custom made stroke
 Capacitive level indicator, rotating pallet...
 Mild steel and stainless steel finishings
 Electrical panel and button box
 Filtering area: 10 m²

IMPLEMENTATIONS

- Under silos
- Under rotary valves
- Under bucket elevator
- Under screw conveyor
- Under valves



▶ Long strokes for adaptability to connection height



▶ Centering cone



▶ Lifting cables external to the product flow



▶ Butterfly or slide valve for product dosing

Advantages



Fan
 2.2kW power
 Versions without dust removal are provided with a nozzle for dust suction

Integrated filtration system
 Pneumatic declogging of the filtering elements and reintroduction of fines through the double bellows vent dedicated to dedusting

Bellows



▶ Dispersion cone and anti-waste system

Level indicator



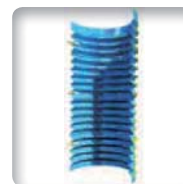
▶ with pallet ▶ vibration ▶ capacitive

Electrical control panel avec télécommande filaire ou radio

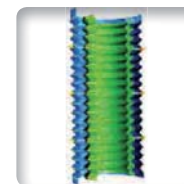
Lifting motorization cage
 All moving parts are protected from corrosion and shock. Two single turns winding pulleys ensure stability and precision during the lifting and lowering of the bellows. High/low position limit switches and slack rope device

Flexible polymere coated cone
 It ensures excellent dustproof during loading operations. The output of the cone can be fitted with an anti-waste device ensuring the closing of the loader in the top position, a barrier to moisture and to the intrusion of insects into the bellows. It also ensures the cleanliness of your workspace.

4 BELLOWS VERSIONS



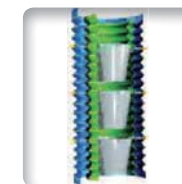
▶ Single bellows



▶ Double bellows

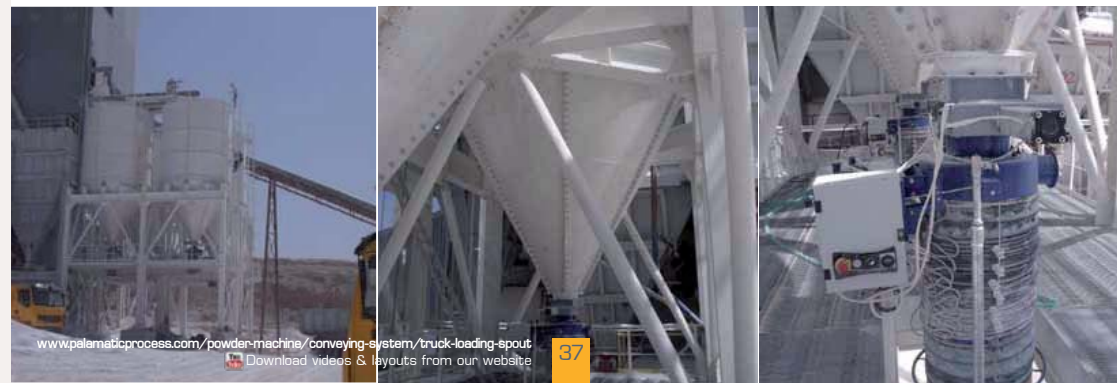


▶ Single bellows with internal cones



▶ Double bellows with internal cones

APPLICATION IN CARBONATE AND AGGREGATES QUARRY



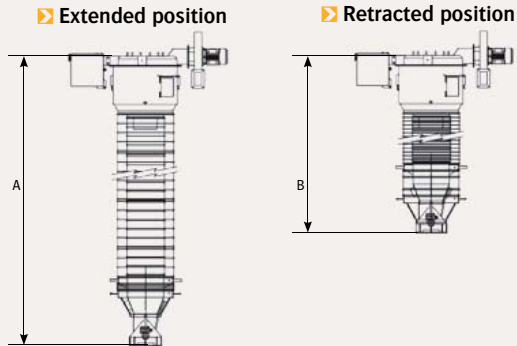
Truck Loading Spout

Dimensions

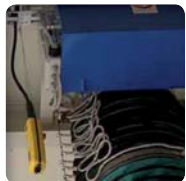
DIMENSIONS

A _{max} (mm.)	B _{max} (mm.)	Stroke (mm.)	Weight (kg)
2,050	1,550	500	303
2,330	1,590	740	305
2,630	1,630	1,000	308
2,810	1,650	1,160	309
3,110	1,690	1,420	311
3,390	1,720	1,670	313
3,590	1,750	1,840	315
3,870	1,780	2,090	317
4,170	1,820	2,350	319
4,450	1,850	2,600	322
4,730	1,890	2,840	324
5,030	1,930	3,100	326
5,310	1,960	3,350	328

* Variable dimensions according to the configuration selected



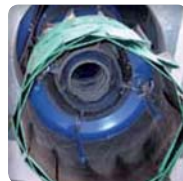
Options



▶ **Electrical box with remote control**



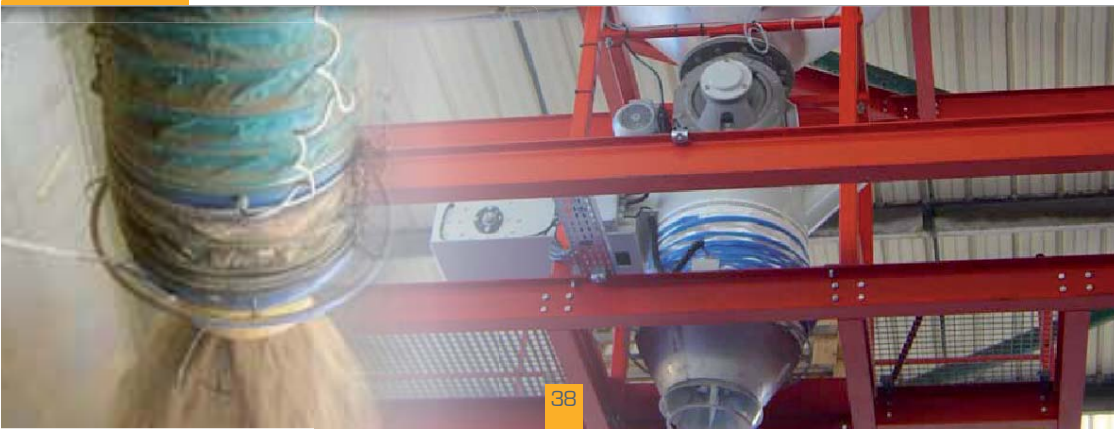
▶ **Filtering system** enabling the balancing of volumes and facilitating dust removal and the flow of the material



▶ **Dustproof skirt** ensuring the suppression of dust raised during loading operations



▶ **Manufacturing adapted to the treated material**



Tank Bulk Loading Station

PALAMATIC PROCESS DESIGNS COMPLETE TURNKEY STATIONS FOR BULK LOADING

Complete skids ensuring the loading tank trucks or wagons offering increased safety for operators and drivers. Ergonomics and secure access are the major advantages of this type of loading station.



▶ **Wagons or tanker loading**



▶ **Platform**



▶ **Loading spout**



▶ **Unloading solutions:**
- big bag discharge station
- sack manual dumping station



▶ **Placement of tanks**
Safety lights and/or camera and detached screens for citem parking assistance.



▶ **Mezzanine safety gate**
Manually or automatically controlled tipping barriers come alongside on tanks to secure the opening phases of the loading holes.



▶ **Conveying solutions:**
- screw conveyor
- belt conveyor
- pneumatic conveying

Installations



▶ EXAMPLES OF COMPLETE SKIDS



▶ POLYPROPYLENE CONDITIONING

The process consists in feeding trucks with granules at a high rate of 35 t./h. (filling time targeted at 45 min). The installed equipment is the following: high rate automatic sack unloading unit, fibc discharging system, pneumatic conveying with booster, cyclofilter and truck loading spout.

Achieved objectives: increased productivity and operator safety.



▶ CHEMICAL PRODUCTS FACTORY

Chemical production plant: loading of tank wagons from two big bag emptying stations.

The truck loading spout is fed by two conveying screws with no intermediate bearing. The flow capacity of the material is 30 tons/h. (ATEX zone 22)



Test Center

INDUSTRIAL SCALE TESTS & FLEXIBILITY



▶ 3 STEPS TO VALIDATE YOUR PROCESS

Step 1 - Before Test

- Select the likely optimal machine configuration based on your technical requirements (powders, flow rate, dosing)
- Draft test proposal by our sales-engineers representatives

Step 2 - During Test

- Process validation for product testing
- Perform testing and sample collection
- Discussion on results after the test with machines (phase diagram, degradation tests, fines content)

Step 3 - After Test

- Analysis of machine test data and samples
- Write a summary report
- Collaborate on the optimal solution for your requirements
- Submit a quotation

▶ THE BENEFITS OF MECHANICAL TESTING

- An individual consultation with and on-going support by our R&D engineers
- Confirmation of the appropriate machines to conduct a test with your product
- Tests at various operating conditions to define the most efficient process according to your industrial requirements
- Evaluation of the profitability of equipment configuration
- Possibility to test additional options using PALAMATIC PROCESS' range of products
- Maximize the return on your investment
- Maximize the optimum selection of the proper machine
- Capitalize on the wide experience of our experts

- ▶ Come with your materials
- ▶ Participate in selecting the test machines
- ▶ Maximize your productivity

300
+ than **300** configurations

- + than **300** process configurations
- **2,400** sq. feet of surface dedicated to the test
- **35** industrial machines
- **35** feet of ceiling
- Test with **all types of products**
- **2** support engineers
- **ATEX** configurations

Our expertise:

FILLING SOLUTIONS FOR BIG BAG AND OCTABIN

To fill

EMPTYING SOLUTIONS FOR BIG BAG AND OCTABIN

To empty, compact and massage

SACK, DRUM AND CARDBOARD FILLING SOLUTIONS

To fill, package, handle

SACK AND DRUM EMPTYING SOLUTIONS

To empty, compact, handle, discharge

SOLUTIONS FOR PNEUMATIC CONVEYING

Vacuum, pressure

SOLUTIONS FOR MECHANICAL CONVEYING

To transfer with screw, belt conveyor, bucket elevator, aeromechanical or vibratory conveyor, truck loading spout

CRUMBLING AND GRINDING EQUIPMENT

To granulate, crumble, grind, pound, micronise, disagglomerate

SIFTING EQUIPMENT

To sift, segregate, sieve, protect

CONTAINERS AND STORAGE SOLUTIONS

To fill, charge, empty, contain

DOSING EQUIPMENT

To control, regulate, empty, extract

MIXING EQUIPMENT

To homogenise, incorporate, fluidify, stir, mix

FLOW AND CONNECTION

To vibrate, fluidise, unclog, drain, facilitate extraction, control the descent, prevent stacks and vaults, connect

INDUSTRIAL DUST COLLECTING EQUIPMENT

To filter, clean, confine, secure



Palamatic

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