en OCT/2008

INTERROLL®

WE MAKE THE WORLD MOVE



CONVEYOR ROLLERS

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INTERROLL CORPORATE ART



INTERROLL CORPORATE ART

At first glance, industrial products and works of art would appear to have little, if anything, in common. However, when one considers that creativity, optimisation, finetuning and the pursuit of perfection are qualities associated with both disciplines and that each project is driven initially by an idea, a moment of inspiration, a seed that requires nurturing, then one will recognise that artist and entrepreneur often share the same traits.

In combination, inspired, provocative art and innovative, state-of-theart products provide a company with those distinctive contours, that unique cultural identity that no balance sheet, no income statement can capture.

It is precisely these intangibles, however, that have the capacity to infuse all aspects of life, lingering in the minds of staff and capturing the imagination of the public. Art has a positive influence on the work environment and the internal processes governing these structures. Each moment of interaction, even if controversial, generates dynamism, openness and creativity; it kindles a spark of innovation, rouses venturesome spirits and shows ways of breaking the shackles of convention and charting new territory.



The declared purpose of Interroll Corporate Art is to channel this immense creative potential, to create a dialogue that embraces art and business as vehicles of communication and to establish an environment in which the spirit of thought is allowed to flourish.

The mission: to accompany, advise and act.

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INTERROLL CORPORATE ART

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The Key to Efficient Materials Handling

The issue of materials flow is of vital importance within today's fast-paced business environment. The areas of production and sales are faced with complex procurement and distribution networks, highly diversified product ranges and customer requirements that call for tailor-made solutions. Against the backdrop of shorter innovation cycles, increasingly complex manufacturing processes and new channels of distribution, materials flow has become a critical factor of success. Globalisation has brought about substantial changes when it comes to the handling and delivery of goods – with far-reaching consequences for companies' logistical processes. "Internet fulfilment" has forced companies to embrace the values of customer-orientated flexibility and greater efficiency.
The products of the Interroll Group play a "pivotal" role in helping companies meet the new challenges of materials handling. Our main focus within the Drives and Rollers unit is on the individual parts which make up an overall product offering that is more than convincing. Components are, in fact, our core competence. As an integral part of Interroll's cutting edge solutions, our conveyor rollers contribute to the overall efficiency and quality of materials handling – in all industries, throughout the world. Conveyor rollers, multi-directional Omniwheels and ball transfer units – Interroll Drives and Rollers stands for poetry in motion. Our systems move, convey, accumulate, feed and turn, in all variations, whether motorised or in the form of gravity rollers, accumulating conveyor systems or tapered rollers.
Interroll components form the basis for efficient materials handling.
Furthermore, we consider ourselves your partner and therefore offer you the best possible service in regard to delivery schedules, reliability and advice to support your market position and ensure top performance. To achieve this, our machines are always of the latest standards and new methods are used to continually adapt our organisation to the growing market. This ensures the excellence of the total package: innovative products of top quality, best possible service with high availability and absolute delivery reliability.

Interroll Drives & Rollers.
A Business Unit of the
Interroll Worldwide Group.

www.interroll.com

General Technical Information

This catalogue contains an overview of conveyor components that provide the optimum solution for virtually all materials handling and storage problems.

To select the conveyor component to match the particular application, the following questions have to be answered beforehand:

- How long, wide and high are the materials to be conveyed?
- How much do the items weigh?
- What are the characteristics of the items?
- What is the base surface of the items like?
- Are there any special ambient conditions that have to be taken into account (e. g. wetness, extreme temperatures, chemical influences)?
- Does the conveyor system, and hence the conveyor surface, have to be antistatic?
- Will the conveyor system be driven or are the items going to run on gravity conveyors?

To ensure that items are conveyed smoothly on roller conveyors, they must be supported by at least three rollers at all times.
The length of the rollers (roller length = “RL”) is normally equal to “item width + 50 mm”.
The weight of the items being conveyed must be distributed over a sufficient number of load-bearing rollers so that the permissible load capacity of the individual rollers is not exceeded. In specific cases, this may mean the items have to be supported by more than three rollers.
The condition of the base surface of the items is also important. Cardboard boxes, for example, adapt very well to rollers, so the weight of the items is distributed evenly. Compared to plastic totes, however, cardboard boxes are likely to have a higher starting resistance. For this reason, it is advisable to select a roller spacing that is closer together than that allowed by the maximum load bearing capacity.
When conveying pallets, it is only about two thirds of the rollers under the items that are normally bearing the load – due to the specific properties of a pallet.
To ensure reliable operation, even under unfavourable conditions, the bearings of most Interroll conveyor rollers are protected against splashes of water. In damp areas, stainless steel ball bearings or specially sealed ball bearings should be selected.
Quiet running is achieved by using bearing housings and seals made of polymer in conjunction with precision ball bearings.
All grooved rollers are constructed so as to prevent electrostatic charges. For other types of rollers, there are likewise special designs available.
Where there are operating conditions requiring special arrangements, please consult us for advice.

The Series

In the layout of our catalogue, it is very important to us that our customers find the contents clearly arranged and easy to understand, since this product information is put together with them in mind. The material for spindles and tubes are identical for a large number of our roller series. Essential differences are however found in the bearing assemblies and materials used. A bearing assembly is always the basis for the various roller series and characterises our product according to application and use in the handling of materials. There are 5 series upon which all our components are based. We have used these to redesign this catalogue from the standpoint of application (which is what our customers know).
A bearing assembly essentially determines the technical parameters of a series and significantly influences the function of the products. The bearings employed in a series are always identical; only structural shapes may vary. The materials for the bearing housing as well as for the seal are likewise always identical within a series. The variations within a series arise from the combination of different spindle and tube dimensions as well as from the different materials.

As an example and for better understanding, here is a brief description of Series 1700, the components of which are the basis for the following Interroll conveyor roller series:

- Universal conveyor roller Series 1700
- Fixed drive conveyor roller Series 3500
- Friction accumulating conveyor roller Series 3800
- Tapered conveyor roller Series 1700 KXO and 3500 KXO
- 24 V DC RollerDrive

All ball bearings of this series are based on the precision ball bearing 6002; only polyamide and polypropylene are used as technopolymers. The characteristics and thus also the applications of the aforementioned conveyor rollers are identical, and they are therefore shown together in a series.

The Load Capacity of Interroll Conveyor Rollers

The load capacity of Interroll conveyor rollers depends on the load capacity of the roller components: tube, spindle and bearings.

To determine the load capacity of rollers, the load capacities of the individual assemblies are compared and calculated in combination.
The load capacity of the weakest assembly determines the load capacity of the entire roller.
The permissible loads for each roller are shown in the tables for the corresponding roller series. Roller load capacity is largely influenced by roller length, load distribution and spindle attachment.
The loads for the entire roller can also be determined with the calculation program for rollers. Specifications for chain drives, toothed drives and round belt drives are also made here. The calculation program can be downloaded under www.interroll.com/ D&R/ Conveyor Rollers/ Technical Information/ Roller Calculation.

In the design of conveyor sections, care should be taken that the load capacity of driven rollers is restricted to the permitted forces for drive chains, toothed belts or carrier forces of friction rollers.

Standard Assemblies for Rollers

Standard types of tubes

Steel tube

As a tube material, steel has the greatest rigidity and resistance to deflection.
If the tube has to be protected against corrosion, zinc-plated steel tube – or even better, stainless steel tube – should be used.
Sprockets and flanges can be welded onto the tube.
The steel tube used for the conveyor rollers is manufactured in accordance with DIN 2393/2394 with limited tolerances (specifications by ITRL). When used with conveyors, these welded steel tubes may in some cases generate noise, which arises from the weld seam scraping against the belt. We at Interroll therefore recommend that the system installer perform test runs to check the respective individual application.
There are also other types available: tubes with round belt grooves, tubes with an elastic PVC sleeve, rubberised tubes, surface-hardened tubes, etc.

Aluminium tube

Compared with steel tube, aluminium tube is not quite as strong and has only about one third of the flexural strength. An aluminium tube, however, weighs only 36 per cent of a comparable steel tube. Moreover, it is not susceptible to corrosion.

PVC-Copolymer Tube

Although not able to withstand the same loads as a steel tube of comparable diameter, PVC tubes offer a series of substantial advantages:

- sound insulation
- high impact resistance
- lightweight
- corrosion proof
- easy to clean

Standard types of spindle

All our polished steel or galvanised spindles are manufactured from cold drawn steel. Zinc-plated spindles are cut from galvanised, zinc-plated rod material, thus the front faces of the female threaded or spring-loaded spindles are always without zinc plating. Zinc-plated, male-threaded or flatted spindles of 12 mm diameter or greater are zinc-plated as a piece only after being processed. Corresponding spindle versions with smaller cross-sections are in these cases made only of stainless steel.

All spindles are sawn and milled so that the spindle ends obtain an optimum result. This avoids problems when mounting the rollers, such as those arising from deformed spindle ends that have been trimmed using scissors.

For threaded holes, the centring holes are made in an initial work step to ensure precision centring of the threaded hole in the spindle.

In the catalogue, spring-loaded spindles and female threaded spindles are shown. The spring-loaded spindle is the simplest type of spindle and is extremely easy and quick to fit and remove.
The use of female threaded spindles results in a very stable frame construction as compared to spring-loaded spindle designs. The roller spindles and profiles stabilise each other, so compared with fitting loosely the rollers can be subjected to higher loads.

Axial tolerances

All conveyor rollers must be constructed with axial play. Interroll recommends a total axial play of 1 mm, which is also already taken into account in the calculation of RL = EL – x mm with 2 x 0.5 mm.

For rollers with female threaded spindles, the axial play results from the spindle protrusion beyond the roller body. Due to the additon of tolerances, the play of 0.5 mm per roller end depicted in the drawings cannot always be maintained in each case. However, an axial play that does not impair the function of the roller – if correctly installed and used – is guaranteed. The play of 0.5 mm per roller end should therefore only be used as a reference value.

For conveyor profiles made of aluminium, the female threaded spindles should always be selected with the largest possible diameter and the smallest possible thread. This ensures that the front face of the spindle is so large that the spindle's penetration in the aluminium profile is reduced.

Standard types of bearing

For many Interroll conveyor rollers there are various bearings available. All lubricants used in our ball bearings are silicone-free.

Interroll bearing

This is a ball bearing developed by Interroll which has smoothly rolled race grooves, is of very simple design and has a comparatively high load capacity.
Compared with the precision ball bearing, the Interroll bearing is much less sensitive to potential bearing distortion. Alongside the precision ball bearing, this is the standard bearing for Interroll conveyor rollers.

Interroll bearing made of stainless steel

This bearing is identical in design with the Interroll ball bearing, however, it is made entirely of stainless steel.
On account of the non-corroding properties, this version of the bearing has a lower load capacity.



DIN precision ball bearing

This type of bearing is the standard DIN deep groove ball bearing in series 60 and 62. All precision ball bearings are specified over the DIN standard in order to guarantee an optimum and reliable functioning of our products. This includes bearing play, lubrication and sealing.
Precision ball race, maximum load capacities and service life, plus low-noise operation are the outstanding advantages of this type of bearing.
All precision ball bearings used are sealed in the 2Z versions. Alternative seals are available on request according to bearing type or size.

2RZ precision ball bearing

This type of bearing is a precision ball bearing which has steel sealing discs and rubber lips on both sides.
These sealing discs form a narrow sealing gap and make no contact, which ensures an optimal start of the roller.
The rubber lips are designed so that with pressure from the outside they lie against the inner ring. This provides a sealing quality comparable to the 2RS version.
For the ball bearing 6002 in 2RZ, an oil-lubricated variation is also available as an alternative to the standard greased version.
The oil-lubricated version is characterised by its easy-running properties.

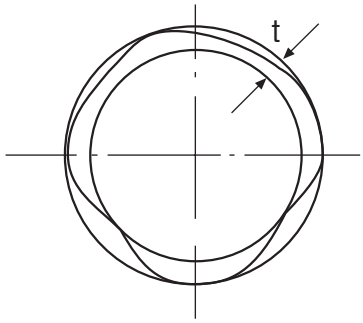
Concentricity

Interroll manufactures conveyor rollers made of tubes to the DIN standard. This standard allows certain deviations in concentricity.

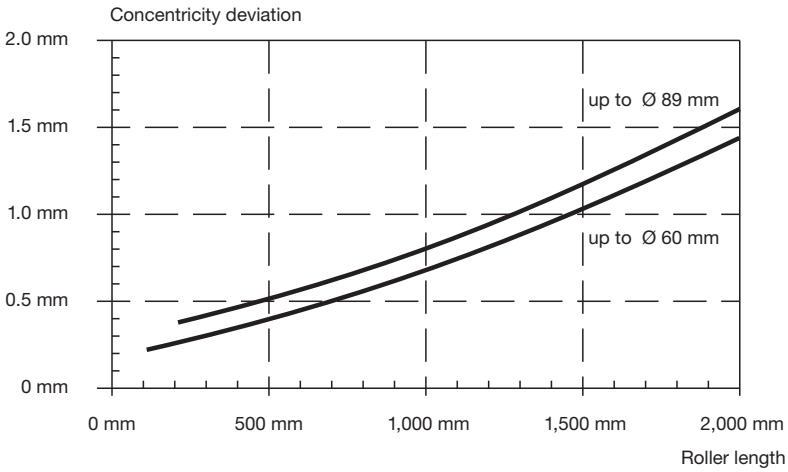
When specifying “concentricity (t) = 0.3 mm”, for example, the needle of a gauge must be within a range of 0.3 mm.

In the case of rollers with PVC-Copolymer tubes, a certain length should not be exceeded, otherwise the concentricity deviations will be disproportionately higher:

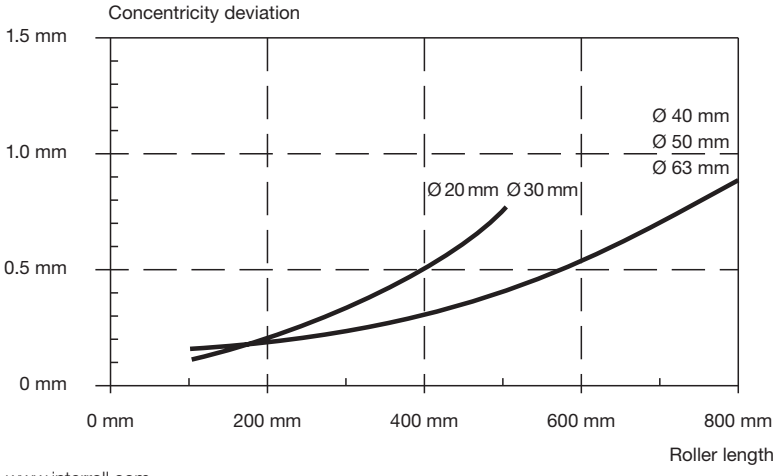
- tube diameter 20 mm: 400 mm
- tube diameter 30 mm: 500 mm
- tube diameter 40/50 mm: 600 mm
- tube diameter 63 mm: 800 mm
- tube diameter 90 mm: 1000 mm



Concentricity deviations for rollers with steel tube



Concentricity deviations for rollers with PVC-Copolymer tube



The diagrams that follow indicate what approximate values can be expected for the maximum concentricity deviation of an entire Interroll conveyor roller.
The figures stated are based on measurements. Please bear in mind that for DIN tubes much higher concentricity tolerances are permitted in some instances, so the approximate figures listed in the diagrams may be exceeded in individual cases.

Different Types of Industrial Plastics

On virtually all conveyor elements, Interroll uses parts made of industrial plastics.

These plastics have many advantages over steel:
- sound insulation
- suitable for foodstuffs
- easy to clean
- high impact resistance
- corrosion proof
- lightweight
- high-quality design

Properties and applications for the industrial plastics used most frequently

Polyamide
- excellent mechanical properties
- high resistance to wear
- low friction
- scarcely any material fatigue
- good resistance to chemicals
- applications: sprocket heads, seals and bearing housings

Polypropylene
- low specific weight
- high resistance to heat
- good resistance to chemicals
- non-hygroscopic
- applications: wheels, seals and bearing housings

Polyvinylchloride (rigid PVC)
- scratch proof
- impact resistance
- good resistance to chemicals
- applications: tubes for PVC rollers

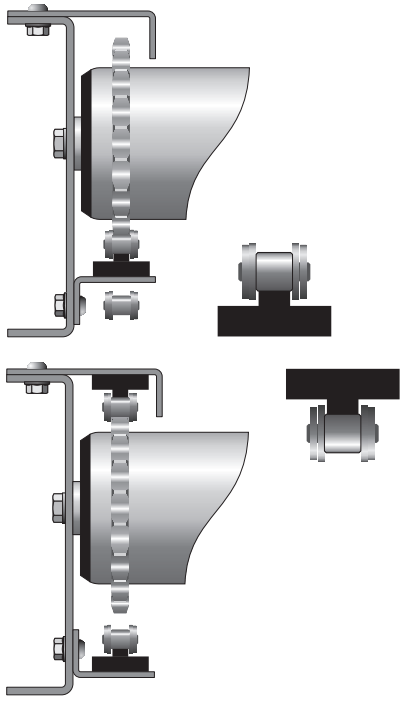
Polyoxymethylene (POM)
- excellent mechanical properties
- high resistance to wear
- low friction
- high dimensional stability
- scarcely any water absorption
- use for parts with special precision requirements
- applications: toothed belt heads and slide bearings

Types of Drive

Measurements and tolerances
Interroll provides a roller calculation program for its customers, which is available for downloading on our Internet site under www.interroll.com/ D&R/ Coveyor Rollers/ Technical Information/ Roller Calculation. Specifications for chain drives, toothed drives and round belt drives are also made here.

Tangential drive
The tangential drive (by chain) is characterised by a good level of efficiency and simple design.
The installation length of the roller is shorter than for a drive from roller to roller.
A single chain drives all the rollers of the conveyor. The chain is pressed onto the appropriate sprockets by the chain guide profile made of special plastic.
The roller teeth meshing with the chain only transfer the driving power necessary for the individual roller. The chain can be guided either along the top or bottom of the rollers.
The chain guide in relation to the roller has to be positioned accurately (to within 0.5 mm).
The motor station to be used is installed in such a way that the pulling side of the chain is as short as possible. The motor station is usually also provided with a device for adjusting chain tension.

Deflection rollers, which have to bear not only the load of the items being conveyed but also the forces of chain traction, may have to be checked especially with regard to their permissible roller load. The conveyor length to be driven by a drive unit is only restricted by the maximum breaking load of the chain and the weight of the load to be conveyed.
With the tangential drive, roller spacing (roller pitch) can be selected as required. Compared with roller to roller drive, rollers are easier to remove and fit.



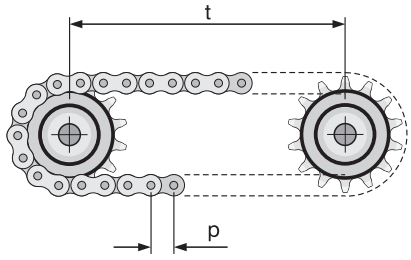
Roller-to-roller drive (chain)
Here too, the design is simple, but there are a few design limitations when using this type of drive.
No chain guide is required, but the roller pitch (distance from roller to roller) depends on the size of the chain, and close tolerances must be maintained (see Tolerances table).

The maximum conveyor length that can be driven by one motor is restricted by the maximum breaking load of the chain; the chain experiences maximum load at the motor station.
In order to keep the forces of the chain to a minimum, Interroll recommends positioning the drive station at the centre of the conveyor length.
Care should then be taken to observe the following:

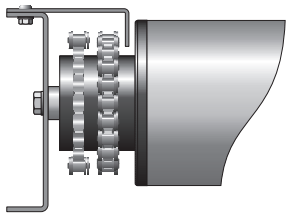
1. The chains are able to be tensioned.
2. The motor can be centrally aligned with the load-bearing rollers.

When designing the drive station, it must also be ensured that the sprockets have a 180° deflection if possible and that the chain tension can be readjusted.

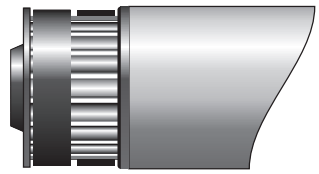
Interroll suggests the following tolerances for roller spacing t:

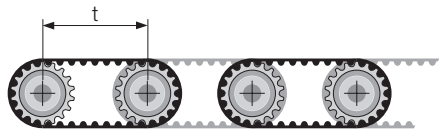


Chain pitch inches	P mm	Tolerance for t mm	Breaking load N
3/8	9.525	0 to –0.4	9,100
1/2	12.700	0 to –0.5	18,200
5/8	15.875	0 to –0.7	22,700
3/4	19.050	0 to –0.8	29,500
1	25.400	0 to –1.0	58,000



Toothed belt
As an alternative to the roller-to-roller chain drive, it is also possible to use a toothed belt.
Toothed belt drives run quietly, are maintenance-free and can be used at high drive speeds.
As with the chain drive, roller pitch has to be within narrow limits.
The tolerance for the roller pitch depends on the manufacturer of the toothed belt; please contact your supplier for this.





Zinc-plating

All zinc-plated surfaces are galvanised; the layer thicknesses are at least 5 μm.

Stability of galvanised zinc-plating

1. Mechanical stress:
   Zinc-plated surfaces are sensitive to scratches as well as scouring. Damage can lead to spotted corrosion.
   In the case of localised damage to the protective layer, the entire corrosion concentrates on these unprotected points.
2. Thermal stress:
   The zinc-plating normally withstands at least 200 °C.
   Avoid drastic changes in temperature (inner strain). Rising temperature means lower corrosion resistance.

A zinc-plated and passivated surface reacts to:

- air humidity
- acidic environments (emissions, salts, pyroligneous acid etc.)
- alkaline materials (lime, chalk, cleanser, CO_2)
- sweaty hands
- solutions of other metals (copper, iron, ...)

Zinc-plating is not compatible with foodstuffs.

Consequences and notes

Measures must be taken in order to maintain the limited protective effect of zinc-plating, e.g. special packaging in the case of overseas shipping. For longer periods of storage, suitable measures are likewise to be taken.

Critical applications

- conveyor systems in harbour areas
- environments with salt and humidity
- shipping in sub-tropical countries
- transport of wet wood products

Summary

Galvanised zinc-plating provides only temporary protection from corrosion of the zinc as well as of the iron.
The duration of corrosion protection is mechanically and thermally influenced by the aforementioned stresses.
If the entire galvanised zinc-plating process (pre-treatment, zinc-plating, passivating, drying) is performed correctly, the “zinc with follow-up passivating” process for “transport roller” applications can represent, depending on the costs and other possible alternatives, an effective and optimum surface treatment.



SERIES 1100

	Description	Series	Page	Additional options	Page
Series 1100	Light conveyor roller	1100	18		141
	Polypropylene conveyor wheels	2130	22		141
	Polypropylene conveyor wheels	2160	23		141



Max. load capacity dynamic	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
350 N	0.3 m/s	20, 30, 40, 50 mm	●	●	
200 N	0.5 m/s	48 mm			
70 N	0.3 m/s	48 mm			

Series 1100

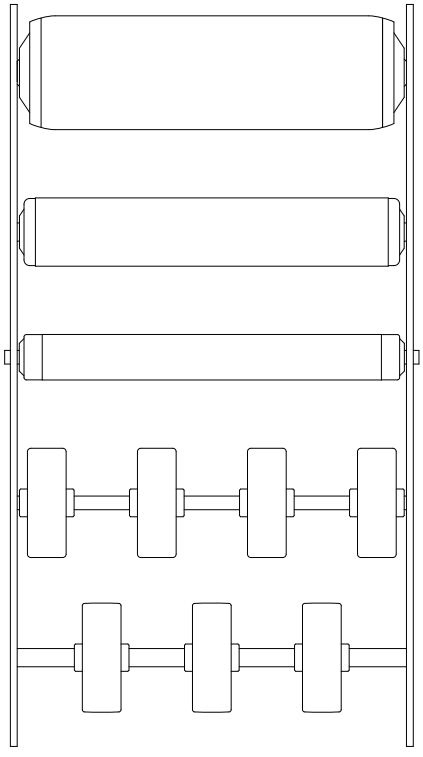
Series 1100
Series 2130
Series 2160

Series 1100 is based on a plastic ball bearing with steel balls. The outer ring and cone of the bearing are made of polypropylene or POM. The steel balls can alternatively be manufactured from stainless steel. The bearings are lubricated with a foodstuff-compatible grease. The materials used are an ideal combination for easy and especially quiet running of conveyor rollers for gravity systems. The components of Series 1100 are not suitable for use as driven elements.

Material properties of Series 1100:

- Max. conveying speed 0.1 m/s for Ø 20 mm and up to 0.3 m/s for Ø 50 mm
- Temperature range –5 °C to +40 °C
- Polypropylene is resistant to watery solutions of acids, alkali and salts
- Polypropylene is non-hygroscopic

Series 1100



Series 1100
Female
threaded spindle
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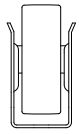
Series 1100
Spring-loaded
spindle
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Series 1100
Spring-loaded
spindle
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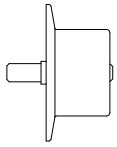
Series 2130
Ø 48 mm
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Series 2160
Ø 48 mm
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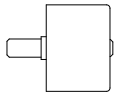
Series peripheral equipment



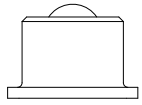
Roller tracks
BU 40
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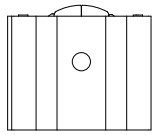
Polypropylene
conveyor wheels
Series 2370
Page 128



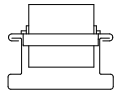
Polypropylene
conveyor wheels
Series 2370
Page 128



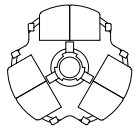
Ball transfer units
Series 5500
Page 137



Omnimat
Series 2800
Page 136



Floway
wheel track
Page 132



Omniwheels
Page 40

Light Conveyor Roller Series 1100

Features
- Special ball bearing developed by Interroll – made of polypropylene with steel balls
- Rounded roller ends for easy sliding of items onto the conveyor laterally
- Especially quiet running
- Good starting and running properties
- Integrated sealing in front of ball bearing to protect against coarse dirt and splashes of water
- Low-cost non-corroding version using stainless steel balls

Load capacity
- Up to 350 N

Dimensions

Tube
- Highly impact-resistant special PVC-Copolymer in stone grey (RAL 7030) with an outer diameter of 20, 30, 40 or 50 mm
- Zinc-plated steel to DIN 2394 with an outer diameter of 16, 20 or 50 mm
- Stainless steel to DIN 2463 with an outer diameter of 20 or 50 mm
- Aluminium with an outer diameter of 16, 20 or 50 mm

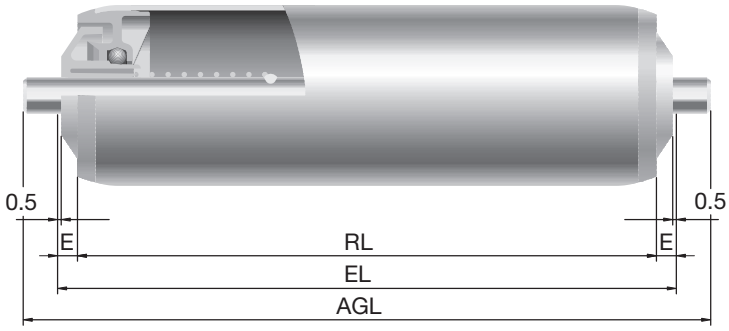
Spindle
- Bright steel or stainless steel
- Spring-loaded spindle, diameters of 6, 8, 10 mm or 11 mm hexagonal
- Male threaded spindle, diameter 6, 8 or 10 mm
- Female threaded spindle (M8 x 15), diameter 12 mm

Bearing
- Steel balls roll between bearing housing and seal made of polypropylene
- Colour:
  yellow in standard version
  stone grey in stainless steel version

Options, see page 141
- Flanges for 20 and 40 mm diameters
- Elastic PVC sleeve
- Antistatic version

■ = STANDARD

Spring-loaded spindle



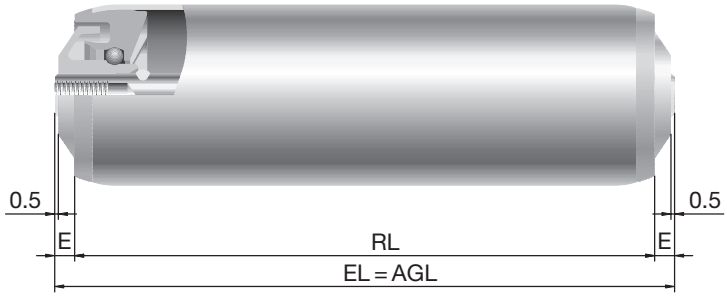
Series 1100

Spindle Ø mm	Roller Ø mm	RL = EL– mm	AGL = EL+ mm	E mm
6	20	5	12	2.5
8	30/40	5	16	2.5
8	50	10	16	5
10	50	10	20	5

Tube	Tube size Ø mm	Type of bearing	Spring-loaded spindle		
			Ø 6 mm	Ø 8 mm	Ø 10 mm
PVC	20 x 1.5	Standard	1.1AY.S20.C03		
		Stainless	1.1AZ.S20.D03		
	30 x 1.8	Standard		1.1CR.S31.E03	
		Stainless		1.1CS.S31.G03	
	40 x 2.3	Standard		1.041.S40.E43	
		Stainless		1.042.S40.G43	
	50 x 2.8	Standard		1.1BG.SAA.EAB	1.1AA.SAA.HAC
		Stainless		1.1BQ.SAA.GAB	1.1AB.SAA.KAC
Zinc-plated steel	50 x 1.5	Standard			1.1AC.JAA.HAC
Stainless steel	50 x 1.5	Stainless			1.1AD.NAA.KAC

(For stainless steel type bearing, spindle is generally also in stainless, otherwise bright steel)

Female threaded spindle



Series 1100

Spindle Ø mm	Thread	Roller Ø mm	RL = EL– mm	E mm
12	M8 x 15	50	10	5

Tube	Tube size Ø mm	Type of bearing	Female threaded spindle Ø 12 mm
Zinc-plated steel	50 x 1.5	Standard	1.1BN.JAA.LAE
Stainless steel	50 x 1.5	Stainless	1.1BP.NAA.MAS

Series 1100

Assumptions: dynamic load, area load

Load capacity (in N)

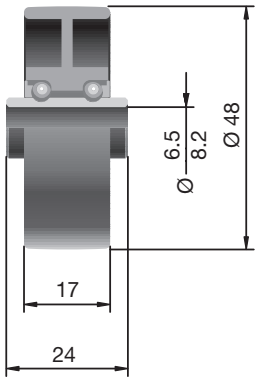
	Steel tube	PVC tube			
	Ø 50 x 1.5 mm any spindle	Ø 20 x 1.5 mm any spindle	Ø 30 x 1.8 mm any spindle	Ø 40 x 2.3 mm any spindle	Ø 50 x 2.8 mm any spindle
EL mm	Ø 10/12 mm	Ø 6 mm	Ø 8 mm	Ø 8 mm	Ø 8/10 mm
100	350	90	120	180	350
200	350	20	100	180	350
300	350	10	40	130	310
400	350	5	20	70	165
500	350		15	40	100
600	350		10	30	70
700	350				
800	350				
900	350				
1000	350				
1100	350				
1200	350				

If a load remains stationary for longer periods, the maximum static load capacity may not be exceeded. This is approx. 50% of the load levels specified in the table.
The maximum permissible conveyor speed is 0.15 m/s for Ø 20 mm rollers, 0.25 m/s for Ø 30 mm, 0.25 m/s for Ø 40 mm and 0.3 m/s for Ø 50 mm.

Options

For all roller series various additions are available, which are listed in the chapter Options (on page 141). Options include:

- Flanges
- Special surface treatments for tubes (hardening, grinding)
- PVC sleeve



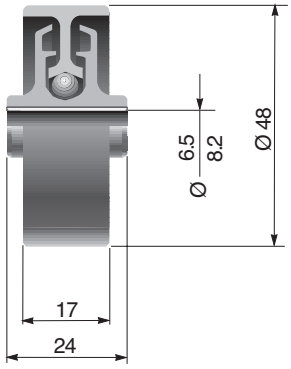
Polypropylene Conveyor Wheels Series 2130

Features
- Low-noise running
- Made of impact-resistant polypropylene
- Colour: black
- Double ball race
- Bearing: steel balls on zinc-plated steel hub
- Load capacity: 100 N static, 200 N dynamic

Dimensions
- Wheel diameter 48 mm
- Hub width 24 mm
- Hub bore 6.5 or 8.2 mm
- Weight: 27 g

Options, page 143
- Rubber tyre

Standard parts numbers (without rubber tyre)	Bore Ø mm
2130	6.5
2131	8.2



Polypropylene Conveyor Wheels Series 2160

Features
- Low-noise running
- Made of impact-resistant polypropylene
- Colour: standard version black, stainless steel version grey (RAL 7030)
- Single-row ball race
- Bearing: steel or stainless steel balls on plastic hub
- Load capacity: 40 N static, 70 N dynamic

Dimensions
- Wheel diameter 48 mm
- Hub width 24 mm
- Hub bore 6.5 or 8.2 mm
- Weight: 18 g

Options, page 143
- Rubber tyre

Standard parts numbers (without rubber tyre)	Bore Ø mm
2160	6.5
2164	8.2



SERIES 1200

	Description	Series	Page	Additional options	Page
Series 1200	Steel conveyor roller	1200	28		141
	Steel conveyor wheels	2200	31		141





Max. load capacity dynamic	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
1200 N	0.8 m/s	30, 50 mm	●	●	
200 N	0.8 m/s	48 mm			

Series 1200

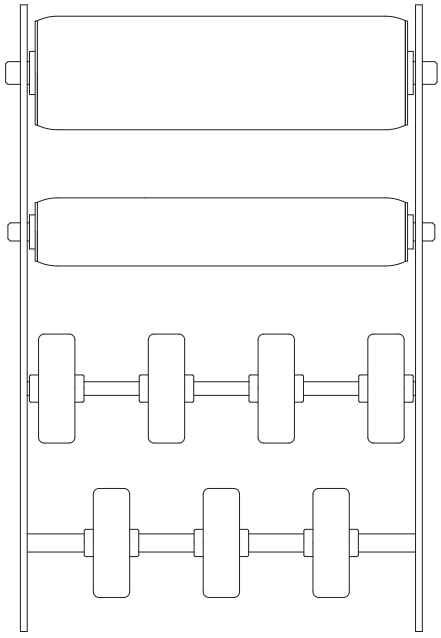
Series 1200
Series 2200

The solid steel rollers and conveyor wheels of Series 1200 are intended for use under extreme temperatures where the limit values for plastics are exceeded. The pressed bearing shells and inner rings of the metal ball bearings are hardened and have galvanised zinc-plating. The shape of the ball bearing is specially designed for conveyor rollers and can tolerate greater bearing distortion than a comparable precision ball bearing. However, conveying speeds are thereby limited. The solid steel construction translates into higher noise levels compared to conveyor rollers with plastic roller housings.

Material properties of Series 1200:

- Max. conveyor speed 0.3 m/s for Ø 30 mm and up to 0.8 m/s for Ø 50 mm
- Temperature range –28 °C to +40 °C
- Grease lubrication with semi-fluid grease, viscosity 0

Series 1200

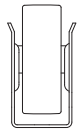


Solid steel conveyor roller
Series 1200
Ø 50 mm
Page 28

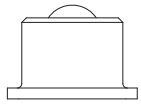
Solid steel conveyor roller
Series 1200
Ø 30 mm
Page 28

Steel conveyor wheels
Series 2200
Page 31

Series peripheral equipment



Roller tracks
BU 40
Page 133



Ball transfer units
Series 5000
Page 140

Steel Conveyor Roller Series 1200

Features
- Metal ball bearings, specially developed for use in conveyor rollers, pressed and hardened
- Secured bearing seat
- Rounded roller ends for easy sliding of items onto the conveyor laterally
- Roller completely antistatic
- Particularly suitable for very high or very low temperatures
- Max. conveyor speed 0.8 m/s

Load capacity
- Up to 1,200 N

Dimensions

Tube
- Zinc-plated steel to DIN 2394 with an outer diameter of 30, 40, 50, 60 or 80 mm

Spindle
- Bright steel
- Spring-loaded spindle, diameter 8, 10, 12, 14 mm or 11 mm, hexagonal
- Spindle with milled flats, diameter 12 or 14 mm
- Male threaded spindle, diameter 8, 10, 12 or 14 mm
- Female threaded spindle (M8 x 15), diameter 12 mm or 14 mm

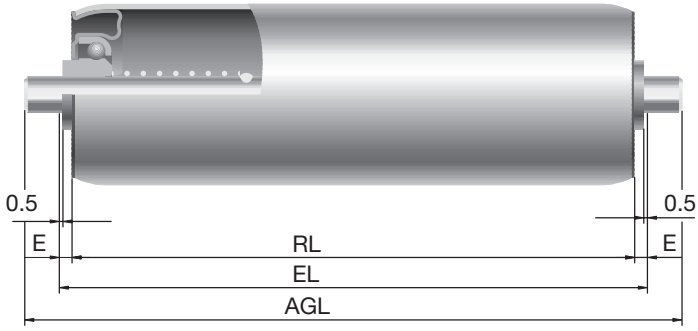
Bearing
- Metal ball bearing, pressed and hardened, up to tube diameter 40 mm with ball cage, larger than 40 mm without ball cage
- Steel balls run in hardened, zinc-plated steel housing
- Temperature range +40 °C/–28 °C

Options, see page 141
- Flanges
- Elastic PVC sleeve

■ = STANDARD

Series 1200

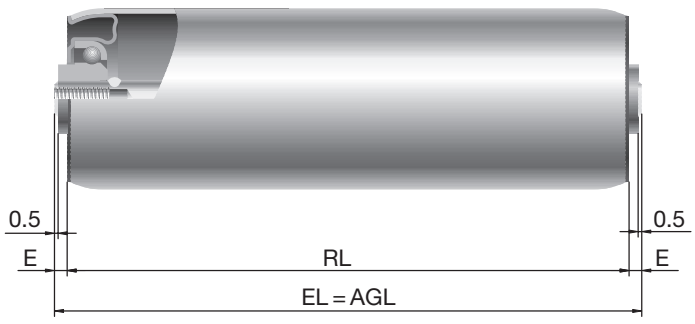
Spring-loaded spindle



Spindle Ø mm	Roller Ø mm	RL = EL– mm	AGL = EL+ mm	E mm
8	30	6	16	3
10	50	6	20	3

Rohr	Tube size Ø mm	Type of bearing	Spring-loaded spindle Ø 8 mm	Ø 10 mm
Zinc-plated steel	30 x 1.2	Metal ball bearing	1.2A2.J14.E9F	
	50 x 1.5	Metal ball bearing		1.2MG.J54.H97

Female threaded spindle



Spindle Ø mm	Thread	Roller Ø mm	RL = EL– mm	E mm
12	M8 x 15	50	6	3

Rohr	Tube size Ø mm	Type of bearing	Female threaded spindle Ø 12 mm
Zinc-plated steel	50 x 1.5	Metal ball bearing	1.2MH.J54.L04

Series 1200

Assumptions: dynamic load, area load

Load capacity (in N)

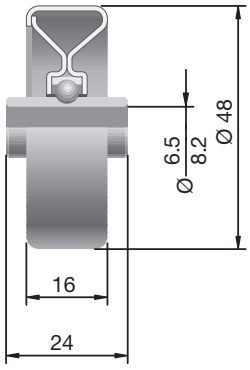
	Steel tube		
	Ø 30 x 1.2 mm Fitted loosely	Ø 50 x 1.5 mm Fitted loosely	Ø 50 x 1.5 mm Fixed
EL mm	Ø 8 mm	Ø 10 mm	Ø 12 mm
100	120	1200	1200
200	120	1200	1200
300	120	1200	1200
400	120	1200	1200
500	120	1200	1200
600	120	1200	1200
700	120	1200	1200
800	120	920	1200
900	120	825	1200
1000		750	1100
1200		640	780
1400		560	570
1600		440	440

The maximum permissible conveyor speed is 0.3 m/s for Ø 30 mm and 0.8 m/s for Ø 50 mm rollers.

Options

For all roller series various additons are available, which are listed in the chapter Options (on page 141). Options include:

- Flanges
- Special surface treatments for tubes (hardening, grinding)
- PVC sleeve



Steel Conveyor Wheels Series 2200

Features
- Made of zinc-plated steel
- Single-row ball race
- Good running stability
- Bearing: steel balls on zinc-plated steel hub
- Long service life due to hardened ball running surfaces
- Load capacity: 100 N static, 200 N dynamic

Dimensions
- Wheel diameter 48 mm
- Hub width 24 mm
- Hub bore 6.5 or 8.2 mm
- Weight: 60 g

Options, page 143
- Rubber tyre

Standard parts numbers (without rubber tyre)	Bore Ø mm
2200	6.5
2201	8.2



SERIES 1500

	Description	Series	Page	Additional options	Page
Series 1500	Slide Bearing Conveyor Roller	1500	36		141
	Slide Bearing Conveyor Roller	1520	38		141
	Omniwheel	2570	40		141
	Omniwheel	2580	40		141



Max. load capacity dynamic	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
200 N	0.8 m/s	30, 50 mm	●	●	●
200 N	0.25 m/s	50 mm	●	●	●
50 N	0.3 m/s	48 mm			
120 N	0.3 m/s	80 mm			

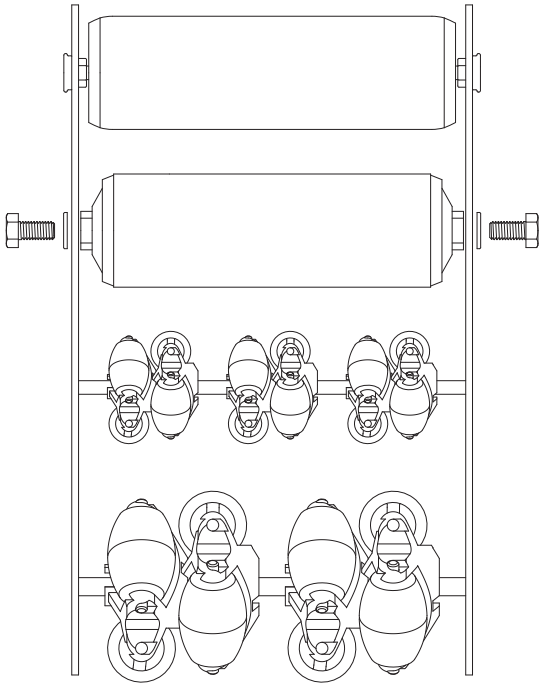
Series 1500

Series 1500
Series 1520
Series 2570
Series 2580

All bearings of Series 1500 are sliding bearings and always consist of a plastic bearing (POM, or POM + PTFE) paired with a stainless steel spindle pin.
The materials and respective surfaces of the bearing pair are precisely matched to one another so that the bearing points can run dry without lubrication.
Both materials are stainless and, with the use of the appropriate tube (PVC or stainless steel), a completely rust-proof roller can be delivered.
All roller housings of Series 1500 are sealed; no liquids or other foreign bodies can penetrate the roller.
The materials used allow cleaning with conventional cleaning agents. The versions within Series 1500 are designed for use in hygienic areas.

Material properties of Series 1500:
- Max. conveyor speed 0.3 m/s for Ø 30 mm and up to 0.8 m/s for Ø 50 mm
- Temperature range –10 °C to +40 °C
- POM is resistant to most solvents and watery alkaline solutions
- POM is not resistant to acids

Series 1500



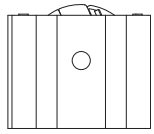
Slide bearing roller
Series 1500
Page 36

Slide bearing roller
Series 1520
Page 38

Omniwheels
Series 2570
Page 40

Omniwheels
Series 2580
Page 40

Series peripheral equipment



Omnimat
Series 2800
Page 136

Slide Bearing Conveyor Roller Series 1500

Features
- Roller without spindle
- A journal pressed into the housing of the roller rotates in the slide bearing installed in the side profile
- Enclosed roller interior. Prevents ingress of foreign bodies
- Roller can be fitted and removed without having to remove the side profile
- Rounded roller ends for easy sliding of items onto the conveyor laterally

Load capacity
- Up to 200 N (depending on conveyor speed)

Dimensions

Tube
- Highly impact-resistant special PVC-Copolymer in stone grey (RAL 7030) with an outer diameter of 30, 40 or 50 mm
- Zinc-plated steel to DIN 2394 with an outer diameter of 30, 40 or 50 mm
- Stainless steel in accordance with DIN 2463 with an outer diameter of 30, 40 or 50 mm
- Aluminium with an outer diameter of 50 mm

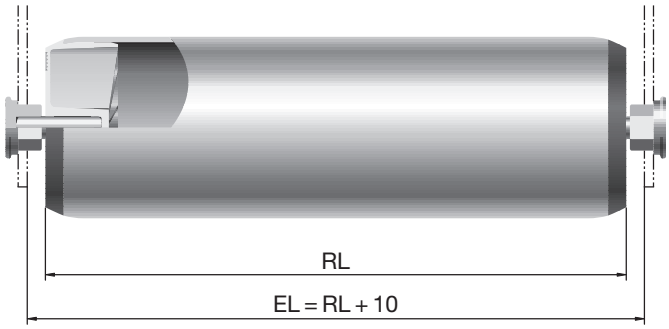
Spindle

Stainless steel spindle pin with a diameter of 6 mm for external slide bearing

Bearing
- External smooth running, wear-free slide bearing made of POM + PTFE
- For the external slide bearing, a snap-in housing for an 11 mm hexagon will be required in a profile with a maximum wall thickness of 2.5 mm

Options, see page 141
- Elastic PVC sleeve

■ = STANDARD



Series 1500

Tube	Tube size Ø mm	Type of bearing	Spindle journal Ø 6 mm
PVC	30 x 1.8	Slide bearing	1.5AB.S3B.00C
	50 x 2.8	Slide bearing	1.5AF.SAA.00C
Zinc-plated steel	30 x 1.2	Slide bearing	1.5AA.J31.00C
	50 x 1.5	Slide bearing	1.5AE.JAA.00C
Stainless steel	30 x 1.2	Slide bearing	1.5AA.N31.00C
	50 x 1.5	Slide bearing	1.5AE.NAA.00C

Load capacity (in N)

The capacity of Series 1500 is influenced by two interdependent parameters: the weight of the items being conveyed and their speed.
This conveyor roller is suitable for items up to approx. 200 N relative to the conveyor speed of maximally 0.8 m/s.

Slide Bearing Conveyor Roller Series 1520

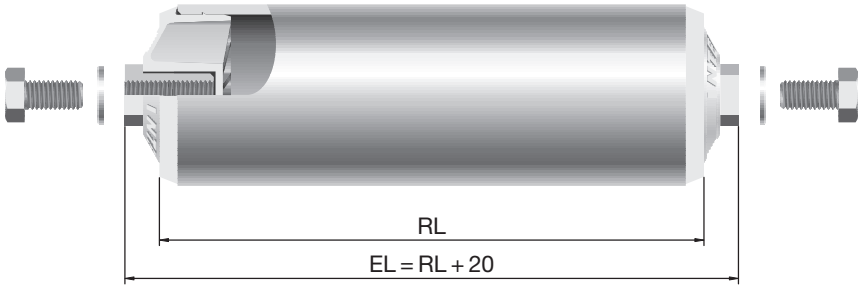
Features
- Roller without spindle
- Enclosed roller interior. Penetration of water, bacteria, etc. is thus prevented.
- Roller housing made of POM rotates as a slide bearing on a screwed-in stainless steel spindle pin
- Rounded roller ends for easy sliding of items onto the conveyor laterally
- Secured bearing seat with form-fitted connection to tube

Load capacity
- Up to 200 N for maximum conveyor speed of 0.25 m/s

Dimensions Tube
- Highly impact-resistant special PVC-Copolymer in stone grey (RAL 7030) with an outer diameter of 50 mm

Spindle
- Stainless steel spindle pin, M8 inner thread, outer diameter of 12 mm, collar spanner width 13

Bearing
- Enclosed slide bearing housing made of POM



Series 1520

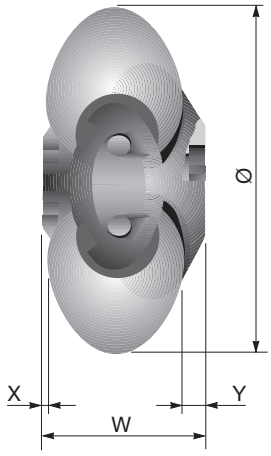
Tube	Tube size Ø mm	Type of bearing	Spindle journal Ø 12 mm, M8 inner thread
PVC	50 x 2.8	Slide bearing	1.520.SAA.P35

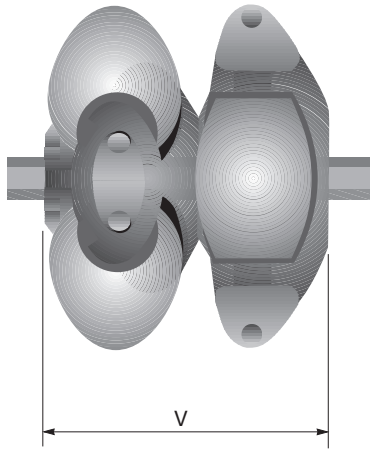
Omniwheel Series 2500

Features
- Conveyance in any direction possible
- Simply designed crossings and switches
- Version driven in one direction possible with hexagonal spindle
- Wheels can be coupled to one another
- Easy to assemble
- Can be used in a dusty envoronment
- Can be used in a moist envoronment (stainless steel journal)
- Base of the conveyed items must be flat and sturdy
- Corrosion resistant
- Load capacity: Series 2570 50 N
  Series 2580 120 N

Dimensions
- Outer diameter of 48, 80 mm
- Hub bores:
  Series 2570: Ø 8.2 mm,
  alternatively 8 mm hex.
  Series 2580: Ø 12.2 mm,
  alternatively 11 mm hex.

Standard parts numbers	Standard Ø mm	Bore Ø mm
2570	48	8.2
2580	80	12.2





Series 2500

Roller Ø mm	Material Wheel body	Material Spool	Bearing Spool	Hub bore mm	Load capacity N (stat./dyn.)	X mm	Y mm	W mm	V mm
48	Polyamide	Polyamide	Slide bearing	8.2	50	3	3	21.5	40
48	Polyamide	Polyamide	Slide bearing	8.1 hex.	50	3	3	21.5	40
80	Polyamide	Polyamide	Slide bearing	12.2	250	4	4	34	65
80	Polyamide	Polyamide	Slide bearing	11.2 hex.	250	4	4	34	65

Design information

The load capacity of the multi-directional Omniwheels is utilised to the full if interacting Omniwheels have exactly the same level, and if the surfaces coming into contact with the Omniwheels are smooth.

If operating conditions are not ideal, a corresponding number of extra Omniwheels must be used so that there is always adequate contact between the items being conveyed and the load-bearing Omniwheels.



SERIES 1700



	Description	Series	Page	Additional options	Page
Series 1700	Universal conveyor roller	1700	58		141
	Friction conveyor roller	3800	76		141
	Friction conveyor roller, adjustable	3800	84		141



Max. load capacity dynamic	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
2,000 N (3,000 N)	2.0 m/s	30, 40, 50, 60 mm	•	•	•
500 N	0.5 m/s	50 mm			
500 N	0.5 m/s	50 mm			



SERIES 1700

	Description	Series	Page	Additional options	Page
Series 1700	Fixed drive conveyor roller	3500	66		141
	Friction accumulating conveyor roller	3800	76		141
	Friction conveyor roller (double friction)	3870	83		141



Max. load capacity dynamic	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
2,000 N	2.0 m/s	50, 60 mm	●	●	
500 N	0.5 m/s	50 mm			
500 N	0.5 m/s	50 mm			



SERIES 1700

	Description	Series	Page	Additional options	Page
Series 1700	Tapered fixed drive conveyor roller	3500-KXO	86		141
	Tapered universal conveyor roller	1700-KXO	86		141



Max. load capacity dynamic	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
500 N	1.2 m/s	50 mm			
500 N	1.2 m/s	50 mm			●



SERIES 1700

	Description	Series	Page	Additional options	Page
Series 1700	RollerDrive	BT100	94		141
	Universal conveyor roller	1700	58		141



Max. load capacity static	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
1,000 N	0.15 – 1.1 m/s	50 mm		●	●
2,000 N	2.0 m/s	50 mm		●	●

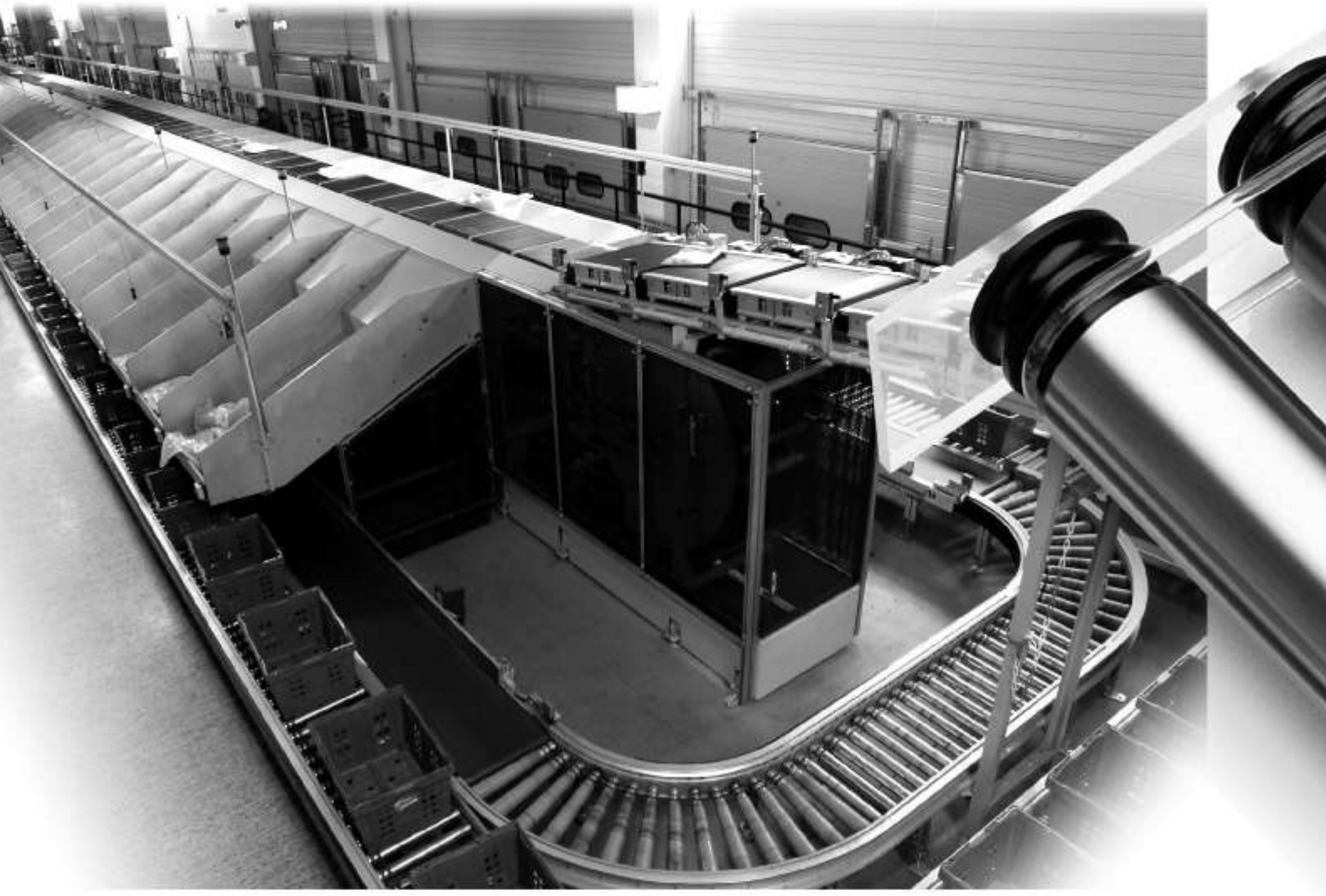


SERIES 1700

	Description	Series	Page	Additional options	Page
Series 1700	RollerDrive	EC100	97		141
	Fixed drive roller	3500	66		141



Max. load capacity static	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
1,000 N	0.2 – 1.35 m/s	50 mm		●	●
2,000 N	2.0 m/s	50 mm		●	



SERIES 1700

	Description	Series	Page	Additional options	Page
Series 1700	RollerDrive	EC200	100		141
	RollerDrive	EC300	102		141
	Z-card module		105		141
	Fixed drive roller	3500	66		141



Max. load capacity static	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
1,000 N	0.04 – 0.73 m/s	50 mm		●	●
1,000 N	0.12 – 2 m/s	50 mm		●	●
2,000 N	2.0 m/s	50 mm		●	

Series 1700

Series 1700
Series 1700 KXO
Series 3500
Series 3500 KXO
Series 3800
RollerDrive

Series 1700 is the basis for several roller series which are used in the field of container conveyance technology as well as in limited applications for pallets.
The bearing assembly is designed as sealed precision ball bearings based on the DIN ball bearings 6002, 689 and 6003. Alternatively, the Interroll ball bearing (see page 7) can be used for the ball bearing 6002 with the same outer diameters. The ball bearings are lubricated with a silicone-free grease; the ball bearing 6002 can be ordered in the oil-lubricated version.
The roller housings and drive heads of Series 1700 are manufactured from a high-strength polyamide or POM and are built form-fitted into the tubes in the standard versions. The bearing seat of the ball bearings in the roller housings is secured through the snap edge; the integrated seal is fixed in the inner ring of the ball bearing. The polypropylene seal has three functions:

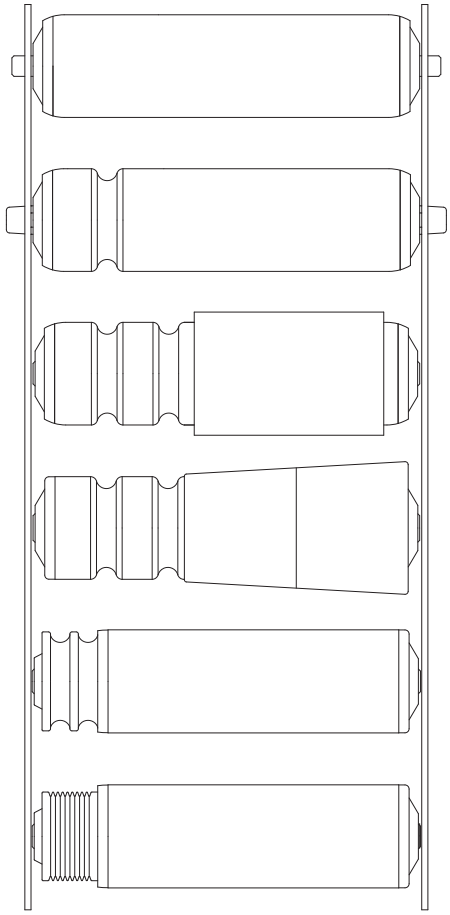
- Protecting the ball bearing from coarse dirt and splashing water
- Compensating for the different diameters of spindle and inner ring of ball bearing
- Dissipating the axial forces in the ball bearing

The bearing design, comprised of polyamide roller housings, steel ball bearings and a polypropylene seal, results in an extremely low-noise conveyor wheel which is also able to bear high loads.
All roller versions of Series 1700 have a very wide range of application and have been produced for many years in large quantities.

Material properties of Series 1700

- Max. conveyor speed 1.0 m/s for Interroll ball bearings and up to 2 m/s for precision ball bearings (depending on RL)
- Temperature range –5 °C to +40 °C
- Polyamide is resistant to oils, petrol and alcohol
- Polyamide is not resistant to acids
- Polypropylene is resistant to watery solutions of acids, alkali and salts
- Polypropylene is non-hygroscopic

Series 1700



Universal conveyor roller
Series 1700
Page 58

Universal conveyor roller
Series 1700
with tapered spindle shuttle
Page 62

Universal conveyor roller
Series 1700
with sleeve
Page 63

Universal conveyor roller
Series 1700 KXO
with tapered elements
Page 86

Fixed drive roller
Series 3500
Round belt head
Page 68

Fixed drive roller
Series 3500
V-ribbed belt
Page 70

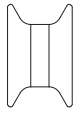
Series peripheral equipment



Pressure roller
Series 2610
Page 130

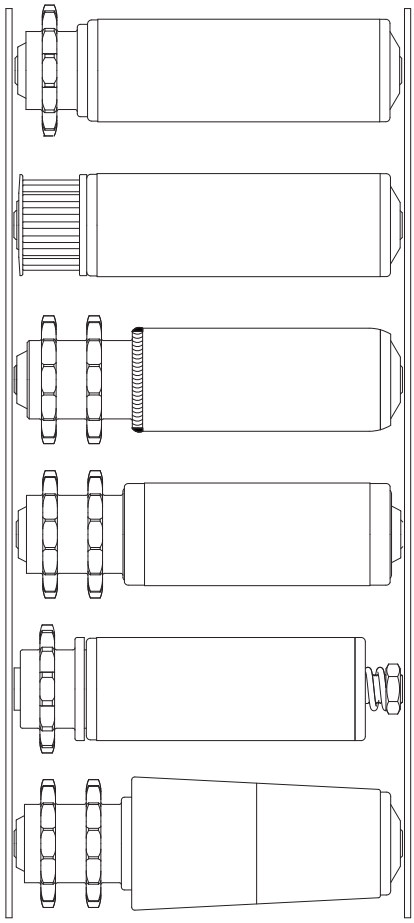


Pressure roller
Series 2611
Page 130



Round belt roller
Page 130

Series 1700



Fixed drive roller /
Friction roller
Series 3500 / 3800
Polyamide sprocket
Page 71/79

Fixed drive roller /
Friction roller
Series 3500 / 3800
Toothed belt
Page 73/81

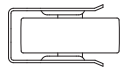
Fixed drive roller
Series 3500
Steel sprocket
Page 74

Double-friction roller
Series 3870
Page 83

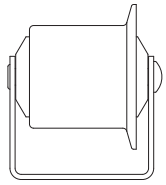
Adjustable friction roller
Series 3800
Steel sprocket
Page 84

Fixed drive roller
Series 3500 KXO
with tapered elements
Page 86

Series peripheral equipment

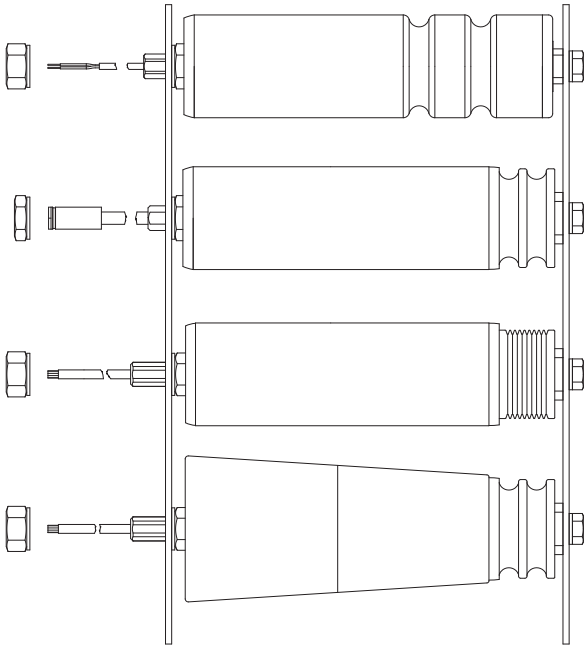


Roller tracks
BU 40
Page 133



Roller tracks
BU 50
Page 134

Series 1700



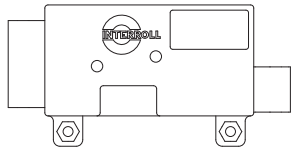
RollerDrive
Series BT100
Page 94

RollerDrive
Series EC100
Page 97

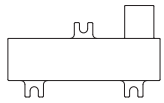
RollerDrive
Series EC200
Page 100

RollerDrive
Series EC300
Page 102

Series peripheral equipment



DriveControl
EC100
Page 99



DriveControl
EC200/300
Page 104



Zone control
Z-card
Page 105

Universal Conveyor Roller Series 1700

Features
- The roller for virtually any application
- Many different types of ball bearings available
- Low-noise running due to the use of polyamide bearing housings and seals
- Secured bearing seat
- Integrated seal in front of the ball bearing to protect against coarse dirt, and water repelling groove to protect the ball bearing against splashes of water
- Rounded roller ends for easy sliding of items onto the conveyor laterally

Load capacity
- Up to 2,000 N
- Up to 3,000 N with precision ball bearing 6003
- Up to 300 N with grooves

Dimensions

Tube

- Highly impact-resistant special PVC-Copolymer in stone grey (RAL 7030) with an outer diameter of 50, 63 or 90 mm
- Zinc-plated steel to DIN 2394 with an outer diameter of 20, 30, 40, 50, 51, 60 or 80 mm
- Stainless steel to DIN 2463 with an outer diameter of 50 mm
- Aluminium with an outer diameter of 50 mm
- Elastic PVC sleeve for 30, 40, 50 or 60 mm tube diameters
- Grooves for tubes, 50 or 60 mm

Spindle

- Bright steel or stainless steel
- Spring-loaded spindle, diameter 8, 10, 12, 14 mm or 8 and 11 mm hexagonal
- Spindle with milled flats, diameter 10, 12, 14 or 17 mm
- Male threaded spindle, diameter 8, 10, 12 or 14 mm
- Female threaded spindle
  Ø 8 mm: M5 x 12
  Ø 12 and 14 mm: M8 x 15
  Ø 17 mm: M12 x 20
- 8 mm hexagonal spindle with spring-loaded tapered spindle shuttle for 11 mm hexagonal holes in the conveyor profile

Bearing

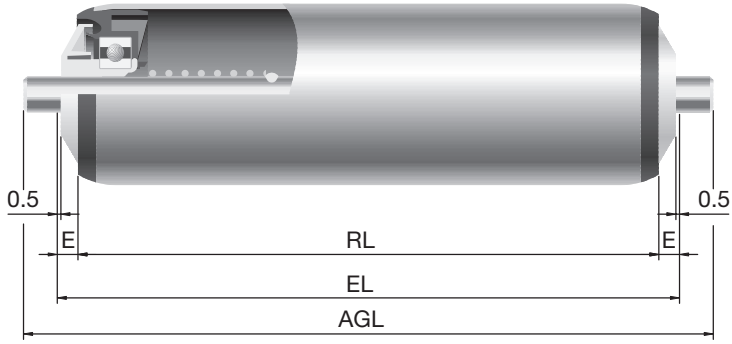
- Bearing housing made of polyamide (black)
- Bearing seal made of polypropylene (yellow)
- Types of bearing:
  – Interroll ball bearing
  – Interroll stainless steel ball bearing
  – Precision ball bearing 6002 2Z, greased
  – Precision ball bearing 6002 2Z, oil-lubricated
  – Precision ball bearing 6003 2Z for a spindle diameter of 17 mm
  – Precision ball bearing 689 2Z, greased, for a roller diameter of 30 mm
  Conveyor speeds:
  – For rollers with 30 mm diameter, depending on RL, max. 1.2 m/s
  – For rollers with 50 mm and 60 mm diameter with precision ball bearing, depending on RL, max. 2.0 m/s (0.8 m/s with Interroll ball bearing)

Options, see page 141

- Flanges
- Antistatic version (page 63)
- Rubberised version
- Hardened tube
- Version without spindle

■ = STANDARD

Spring-loaded spindle roller



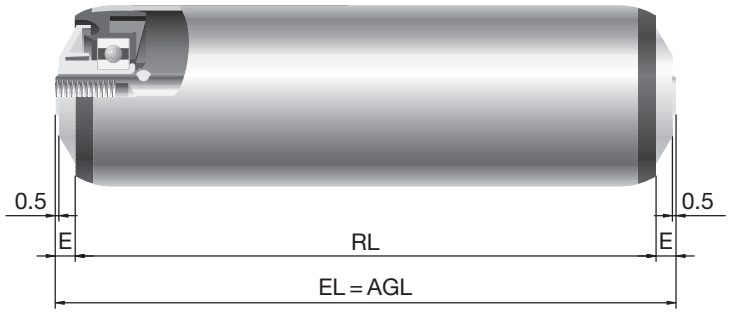
Series 1700

Spindle Ø mm	Roller Ø mm	RL = EL– mm	AGL = EL+ mm	E mm
8	30	5	10	2.5
8	40/50	10	16	5
10	40/50/60	10	20	5
12	50/60	10	24	5
11 hex.	50/60	10	22	5

Tube	Tube size Ø mm	Type of bearing	Spring-loaded spindle Ø 8 mm	Ø 10 mm	Ø 12 mm	11 hex.
PVC	50 x 2.8	ITRL ball bearing	1.7AX.SAA.EAB	1.7AY.SAA.HAC		
		ITRL stainless steel ball bearing	1.7GM.SAA.GAB	1.7GF.SAA.KAC		
Zinc-plated steel	30 x 1.2	Precision ball bearing	1.73H.J31.EAN			
	40 x 1.5	ITRL ball bearing		1.7VG.JF4.HA1		
	40 x 1.5	Precision ball bearing		1.7VS.JF4.HA1	1.7VT.JF4.LAC	
	50 x 1.5	ITRL ball bearing		1.7AB.JAA.HAC	1.7AC.JAA.LAC	1.7AE.JAA.VAB
	50 x 1.5	Precision ball bearing		1.7L6.JAA.HAC	1.7L7.JAA.LAC	1.7L9.JAA.VAB
	60 x 1.5	ITRL ball bearing		1.7AJ.JAB.HAC	1.7AK.JAB.LAC	1.7AM.JAB.VAB
	60 x 1.5	Precision ball bearing		1.7MD.JAB.HAC	1.7ME.JAB.LAC	1.7MG.JAB.VAB
Stainless steel	50 x 1.5	ITRL stainless steel ball bearing		1.7FU.NAA.KAC	1.7FV.NAA.MB0	
Zinc-plated steel with 1 groove	50 x 1.5	Precision ball bearing		1.7L6.JAD.HAC	1.7L7.JAD.LAC	1.7L9.JAD.VAB
Zinc-plated steel with 2 grooves	50 x 1.5	Precision ball bearing		1.7L6.JAE.HAC	1.7L7.JAE.LAC	1.7L9.JAE.VAB
Zinc-plated steel with 2 mm PVC sleeve	50 x 1.5	ITRL ball bearing		1.7AB.J72.HAC	1.7AC.J72.LAC	1.7AE.J72.VAB
Zinc-plated steel with 5 mm PVC sleeve	40 x 1.5	Precision ball bearing	1.7UL.JBZ.EA1	1.7VS.JF5.HA1	1.7VT.JF5.LA1	1.7VV.JF5.VA1
Zinc-pl. st. w. 2 grooves + 2 mm PVC sleeve	50 x 1.5	Precision ball bearing		1.7L6.JCG.HAC	1.7L7.JCG.LAC	1.7L9.JCG.VAB

Relief cut measurement for sleeve and dimensioning of the rollers with grooves on pages 63/64

Female threaded spindle



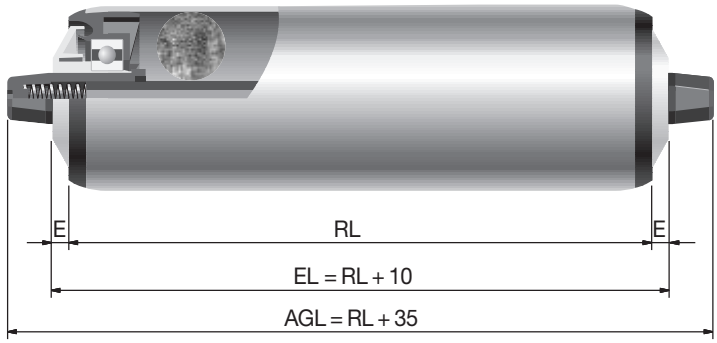
Series 1700

Spindle Ø mm	Thread mm	Roller Ø mm	RL = EL– mm	E mm
8	M5 x 12	30	5	2.5
12	M8 x 15	40/50/60	10	5
14	M8 x 15	50/60/80	10	5
14	M10 x 20	50/60/80	10	5
17	M12 x 20	50/60	10	5

Tube	Tube size Ø mm	Type of bearing	Female threaded spindle Ø 8 mm	Ø 12 mm	Ø 14 mm	Ø 17 mm
Zinc-plated steel	30 x 1.2	Precision ball bearing	1.73H.J31.EAJ			
	40 x 1.5	Precision ball bearing		1.7VT.JF4.LA2	1.7VU.JF4.NAE	
	50 x 1.5	Precision ball bearing		1.7L7.JAA.LAE	1.7L8.JAA.NAE	1.75A.JAA.RAA
	60 x 1.5	Precision ball bearing		1.7ME.JAB.LAE	1.7MF.JAB.NAE	
	60 x 3	Precision ball bearing				1.75C.J63.RAA
Zinc-plated steel with 1 groove	50 x 1.5	Precision ball bearing		1.7L7.JAD.LAE	1.7L8.JAD.NAE	
Zinc-plated steel with 2 grooves	50 x 1.5	Precision ball bearing		1.7L7.JAE.LAE	1.7L8.JAE.NAE	
Zinc-plated steel with 2 mm PVC sleeve	50 x 1.5	Precision ball bearing		1.7L7.J72.LAE	1.7L8.J72.NAE	
Zinc-plated steel with 5 mm PVC sleeve	40 x 1.5	Precision ball bearing		1.7VT.JF5.LA2	1.7VU.JF5.NAE	
Zinc-pl. st. w. 2 grooves + 2 mm PVC sleeve	50 x 1.5	Precision ball bearing		1.7L7.JCG.LAE	1.7L8.JCG.NAE	

Relief cut measurement for sleeve and dimensioning of the rollers with grooves on pages 63/64

Tapered spindle shuttle



Series 1700

Spindle Ø mm	Shuttle mm	Roller Ø mm	RL = EL– mm	AGL = EL+ mm	E mm
8 hex.	11 hex.	50	10	25	5

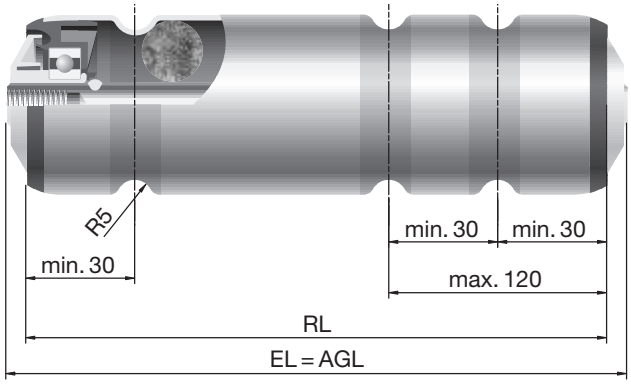
Tube	Tube size Ø mm	Parts number
Zinc-plated steel	50 x 1.5	1.7D1.JX5.V8T
Zinc-plated steel with 1 groove	50 x 1.5	1.7D1.JAD.V8T
Zinc-plated steel with 2 grooves	50 x 1.5	1.7D1.JAE.V8T
Zinc-pl. steel w. 2 grooves and 2 mm PVC sleeve	50 x 1.5	1.7D1.JCG.V8T

Relief cut measurement for sleeve and dimensioning of the rollers with grooves on pages 63/64

This roller is ideal for all motor-driven applications, especially if low-noise is required simultaneously with high output. The spring-loaded tapered spindle shuttle allows the roller to be mounted free of play in conveyor profiles with 11 (+0.3/+0.8) mm hexagonal holes. The roller is thus likewise fixed in position just as a screwed-in roller with female threaded spindle.

Additional properties:

- Spindle shuttle made of conductive material in order to disperse static charge
- Both spindle ends are inserted by pressing in
- Shuttles are aligned opposite to one another
- Installation of the roller in the conveyor profile is the same as for standard spring-loaded spindles
- Very low-noise running due to tapered plastic shuttle
- No wear due to play-free seat of the shuttle in the profile
- Bearing version 6002 2Z, greased
- Max. roller length RL = 1,000 mm
- Max. load of 350 N



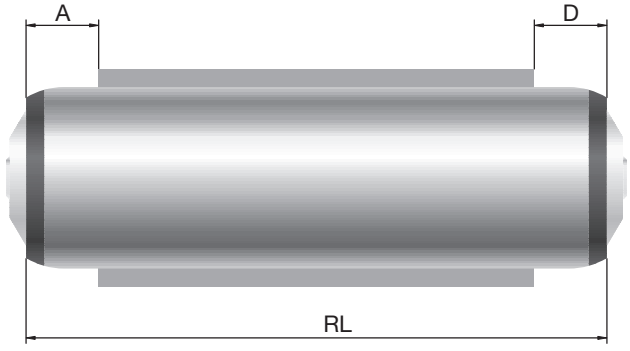
Series 1700 with grooves

Version for round belt drive Series 1700 with grooves

- To prevent electrostatic charges, an antistatic roller version is supplied as standard
- The load capacity per roller is limited to 300 N – due to the driving force of the round belt.

The actual load capacity of the roller with steel tube falls below this value only at lengths greater than 1,400 mm

- It is advisable to select a type of spindle which is protected against torsion (e.g. female threaded spindle)

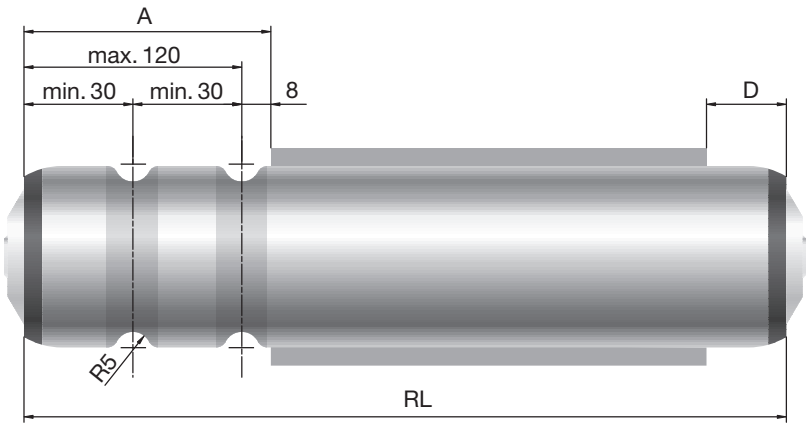


Series 1700 with PVC sleeve

50 mm steel roller version with PVC sleeve, Series 1700

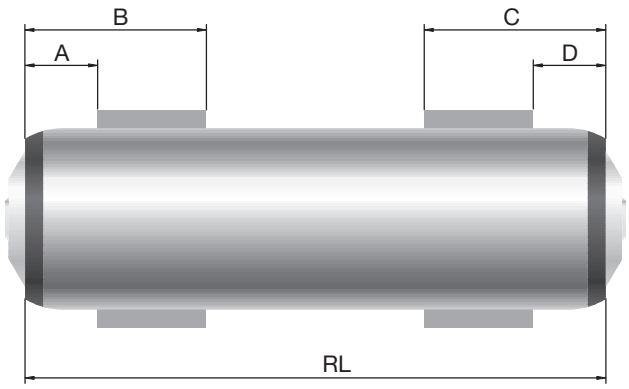
In order to transport sensitive goods or lower the noise level (from conveyed goods on the roller), steel rollers covered with a PVC sleeve in grey (RAL 7037) are used. The sleeve has a 58° shore hardness and is 2 mm thick.
Only galvanised steel pipes or stainless steel pipes may be used.

As a rule, portions of the sleeve are removed in order to, for example, make space for the drive belts. When ordering, the respective dimensions should be specified, otherwise the sleeve will be cut off at the end of the steel tube. The minimum width of the sleeve is 50 mm. In the event of axial forces on the sleeve, such as arise from shifting or lateral channelling, the minimum width may in individual cases be insufficient for ensuring a secure sleeve fit.



Series 1700 with PVC sleeve

The drawing above shows the standard sleeve section in connection with grooves. If measurement “A” is not specified, the sleeve is always severed at 8 mm from the centre of the groove. A shorter distance is not possible. If a distance of more than 8 mm to the centre of the groove is desired, measurement “A” must be specified.



Series 1700

Load capacity [N] for
- dynamic load
- area load

EL [mm]	Steel tube Ø 30 x 1.2 mm Fitted loosely / Fixed Spindle Ø 8 mm
100 – 600	150

	Steel tube, ITRL ball bearing, Fitted loosely						
	Ø 40 x 1.5 mm	Ø 50 x 1.5 mm			Ø 60 x 1.5 mm		
	Spindle	Spindle			Spindle		
EL [mm]	Ø 10/12 mm	Ø 10 mm	Ø 12 mm	11 hex.	Ø 10 mm	Ø 12 mm	11 hex.
200	800	1600	1600	1600	1600	1600	1600
300	800	1600	1600	1600	1600	1600	1600
400	800	1250	1600	1600	1250	1600	1600
600	800	830	1600	1540	810	1600	1490
800	730	620	1380	1170	610	1300	1120
1000	490	500	1140	960	485	1055	900
1300	330	400	660	660	380	835	710
1600		325	440	440	310	690	590

	PVC tube ITRL ball bearing Fitted loosely	Steel tube, Precision ball bearing, Fitted loosely					
	Ø 50 x 2.8 mm	Ø 50 x 1.5 mm			Ø 60 x 1.5 mm		
	Spindle	Spindle	Spindle	Spindle	Spindle	Spindle	Spindle
EL [mm]	Ø 8/10 mm	Ø 10 mm	Ø 12 mm	11 hex.	Ø 10 mm	Ø 12 mm	11 hex.
200	790	1800	2000	2000	1630	2000	2000
300	310	1140	2000	2000	1130	2000	2000
400	800	840	1800	1640	830	1740	1500
600	165	560	1200	1020	540	1160	1000
800	70	420	920	780	400	870	740
1000		340	760	640	320	700	600
1300		260	620	520	250	580	475
1600		220	520	440	200	460	390

	Steel tube, Precision ball bearing, Fixed				
	Ø 40 x 1.5 mm	Ø 50 x 1.5 mm		Ø 60 x 1.5 mm	Ø 60 x 3 mm
	Spindle	Spindle	Spindle	Spindle	Spindle
EL [mm]	Ø 12 mm	Ø 12/14 mm	Ø 17 mm	Ø 12/14 mm	Ø 17 mm
200	800	2000	3000	2000	3000
300	800	2000	3000	2000	3000
400	800	2000	3000	2000	3000
600	800	2000	3000	2000	3000
800	800	1770	1770	2000	3000
1000	560	1120	1120	2000	3000
1300	330	660	660	1160	2140
1600		440	440	760	1400

Detailed calculations for the entire roller can also be determined with the calculation program for rollers. Specifications for chain drives, toothed drives and round belt drives are also made here. The calculation program can be downloaded under www.interroll.com/ D&R/ Rollen/Rollenberechnungsprogramm.

Fixed Drive Conveyor Roller Series 3500

Features
- Series 3500 conveyor rollers are based on the Series 1700 universal conveyor roller
- At the non-drive end there are Series 1700 roller housings. The drive end can be supplied with drive elements either made of plastic (sprockets, V-ribbed belt heads and round belt heads made of polyamide; toothed belt heads made of POM) or steel
- Sprockets made of highly abrasion-resistant and resilient polyamide feature extremely good sound absorption compared with steel sprockets
- Steel sprockets are precision rotating parts which are welded to the tube and have an accurate mesh
- High-precision toothed belt heads for maintenance-free drive solutions with standard toothed belts, T = 8 mm
- V-ribbed belt head made of polyamide for belts with a max. of 4 ribs
- Round belt head for standard round belts with a diameter of 4 mm and 5 mm

Load capacity
- Up to 2,000 N

Dimensions

Tube
- Highly impact-resistant special PVC-Copolymer in stone grey (RAL 7030) with an outer diameter of ~~50~~ or 63 mm
- Zinc-plated steel to DIN 2394 with an outer diameter of ~~50~~ or ~~60~~ mm
- Stainless steel to DIN 2463 with an outer diameter of 50 or 60 mm
- Aluminium with an outer diameter of 50 mm

Spindle
- Bright steel or stainless steel
- Female threaded spindle (M8 x 15), diameter ~~14~~ mm
- Other spindle ends available on request

Bearing
- Bearing housing made of polyamide (black)
- Bearing seal (yellow) made of polyamide for the drive end and polypropylene for the non-drive end
- Types of bearing:
  – Interroll ball bearing
  – ~~Precision ball bearing 6002 2Z~~, 6002 2RS

Chain drive element
- Single or double sprocket head made of high-quality polyamide 6.6 or steel
- Dimensions: 1/2" x 5/16"
- Number of teeth: 9, ~~11~~ or ~~14~~

Toothed belt drive element
- Toothed belt head made of POM
- Dimensions:
  – Toothed belt pitch: 8 mm
  – Toothed belt width: 11.2 mm
  – Number of teeth: 18

Round belt head drive element
- Round belt head made of polyamide with two running grooves
- Belts of 4 mm and 5 mm diameter
- Centre spacing of belts 13.5 mm

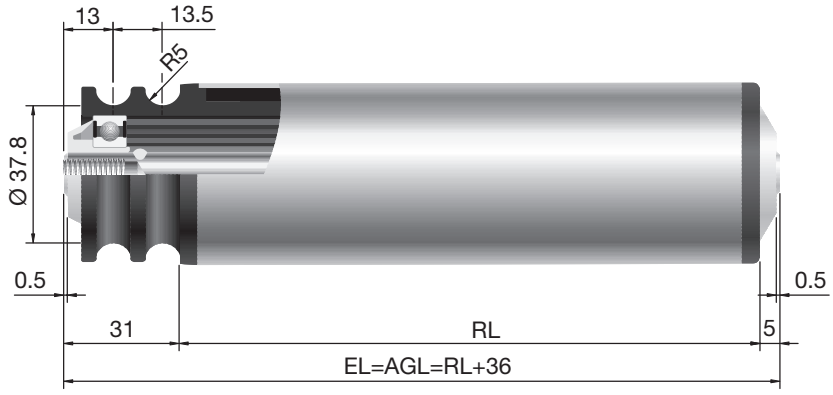
V-ribbed belt drive element
- Drive head made of polyamide with 9 grooves for flexible V-ribbed belts
- PJ form, ISO 9981, DIN 7867
- Pitch 2.34 mm
- Belts with a max. of 4 ribs

Options, see page 141
- Flanges
- Elastic PVC sleeve
- Antistatic version

Drive solutions
Series 3500/3800
The drive elements of the Conveyor Roller Series 3500 (fixed drive) and Series 3800 (friction drive) are dimensioned for container transport. The sprocket heads are available in plastic (polyamide) and also in Z 14 in steel; all other drive solutions are only offered with plastic as standard.

In the tube, a roller housing made of polyamide is mounted, which on the one hand enables fixed drive but at the same time can also be used as friction drive. One should always bear in mind that at speeds above 0.5 m/s, the noise of chain drives tends to increase to an unacceptable level. For this reason, we recommend the alternative drives using toothed belts, V-ribbed belts or round belts for high speeds.
One of the advantages of toothed belts lies in their requiring no maintenance. However, it should be noted that the tolerances for the hole spacing in the profile must be precisely observed. The belt tension that results from this essentially determines the functioning and service life of the belt. Please exactly observe the manufacturer's specifications of your belt supplier.
The drive solutions featuring V-ribbed belt heads and round belt heads are designed for speeds of up to 2 m/s with a max. RL of 1,000 mm. Even when using elastic belts with only 2 ribs, the V-ribbed belt head enables transfer of twice the amount of torque as that delivered by comparable round belts. These belts are flexible and are used with an initial tension of 1–3%. The initial tension results from the roller pitches listed in the catalogue and is taken into account in the length of the belt.
These two drive solutions are only possible for fixed drive. They allow a separation between conveying area and drive, since the belts run directly on the side of the profile.
All drive heads for chain and toothed belts are available in fixed drive and friction drive versions. Since the roller housings installed in the tube are identical for both roller series, the drive heads can also be exchanged at a later time if required.

■ = STANDARD



Series 3500

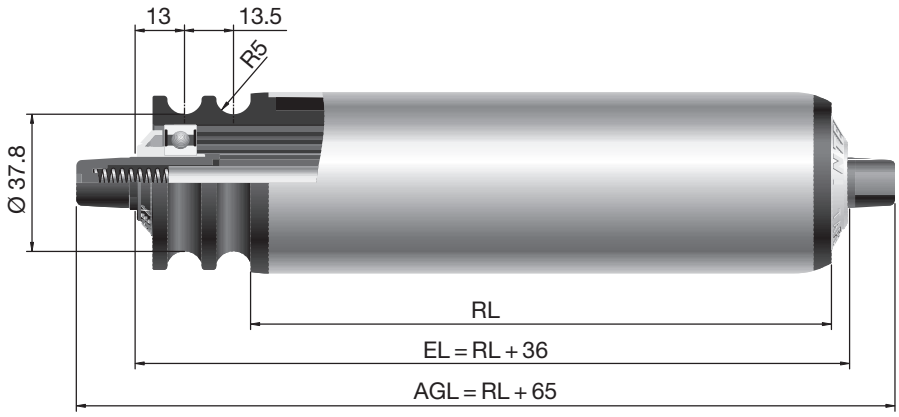
Tube	Tube size Ø mm	Type of bearing	Female threaded spindle Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.5YT.JAA.N7X

Plastic round belt head with two grooves, R = 5 mm.

The drive head is pressed directly into the tube with a correspondingly long press fit. Only fixed drive is therefore possible for this roller.

Additional properties:

- The drive components work as close together as possible on the profile
- Spatially separated drive and conveying areas (important in the case of soiling by the conveyed items)
- Standard O-rings
- No deformation of the tubes due to grooves
- No shifting of lightweight conveyed items due to out-of-round O-rings
- Max. load of 350 N



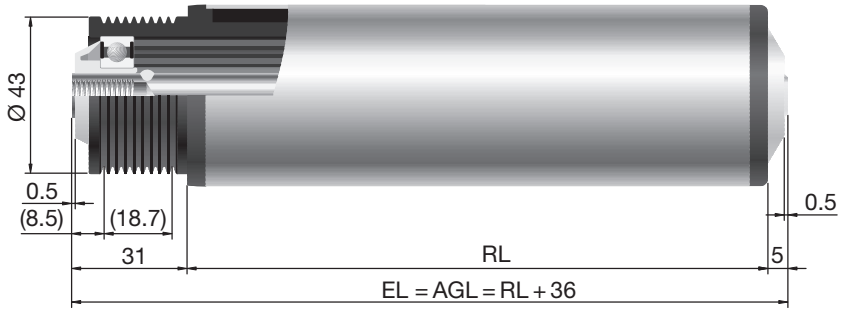
Series 3500

Tube	Tube size Ø mm	Type of bearing	Spring-loaded spindle 8 mm Hexagonal with tapered KST shuttle
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.5YH.JAA.V8U

Plastic round belt head with two grooves, R = 5 mm and tapered spindle shuttle

In addition to the properties listed above, this version features further advantages for the user:
This roller is ideal for all motor-driven applications, especially if low-noise is required simultaneously with high output. The spring-loaded tapered spindle shuttle allows the roller to be mounted free of play in conveyor profiles with 11 mm hexagonal holes. The roller is thus likewise fixed in position just as a screwed-in roller with female threaded spindle.

Features:
- Spindle shuttle made of conductive material in order to disperse static charge
- Both spindle ends are inserted by pressing in
- Shuttles are aligned opposite to one another
- Installation costs same as standard spring-loaded spindles
- Very low-noise running due to tapered plastic shuttle
- No wear due to play-free seat of the shuttle in the profile
- Bearing version 6002 2Z, greased
- Max. roller length RL = 1,000 mm
- Max. load of 350 N



Series 3500

Tube	Tube size Ø mm	Type of bearing	Female threaded spindle Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.5YU.JAA.N7X

Plastic V-ribbed belt head with 9 grooves

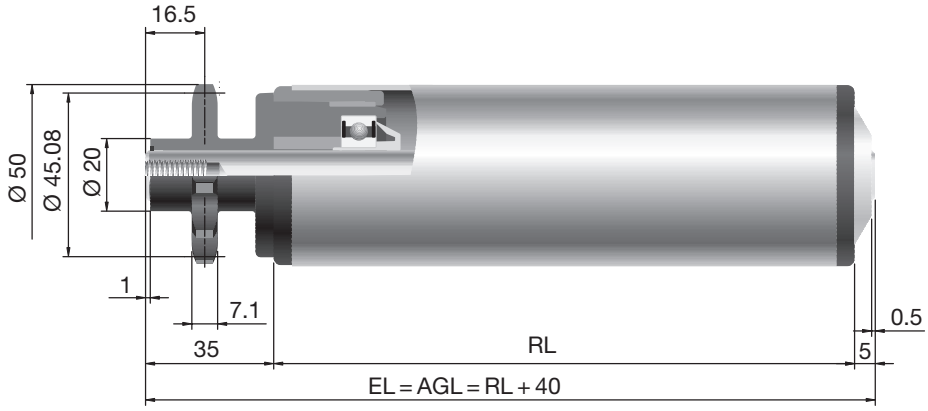
The drive head is pressed directly into the tube with a correspondingly long press fit; therefore only fixed drive is possible for this roller.

Additional properties:

- The drive components work as close together as possible on the profile
- Spatially separated drive and conveying areas (important in the case of soiling by the conveyed items)
- Flexible standard V-ribbed belts, initial tension 1– 3%
- Flexible PJ form; ISO 9981; DIN 7867; pitch 2.34 mm
- Belts with up to 4 ribs can be used (2 x 4 ribs + 1 groove spacing)
- Even when using elastic belts with only 2 ribs, a transfer of twice the amount of torque as that delivered by comparable round belts is possible
- Bearing version 6002 2Z, greased
- Max. load of 350 N

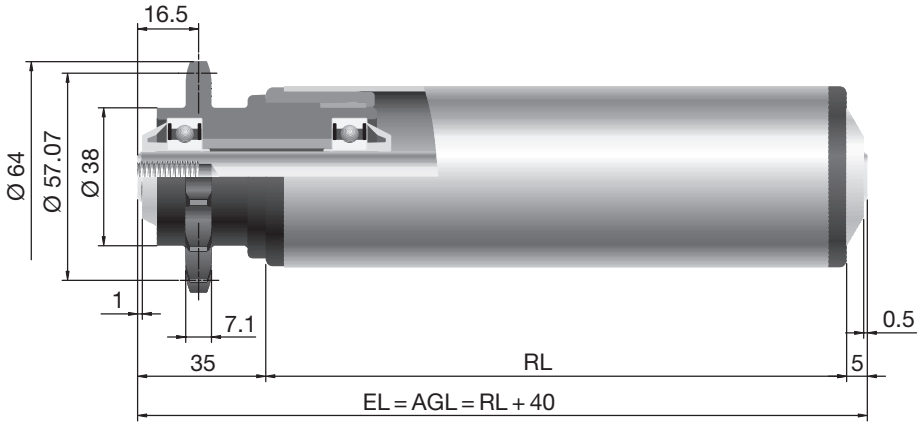
Series 3500

1 polyamide sprocket 1/2", Z = 11



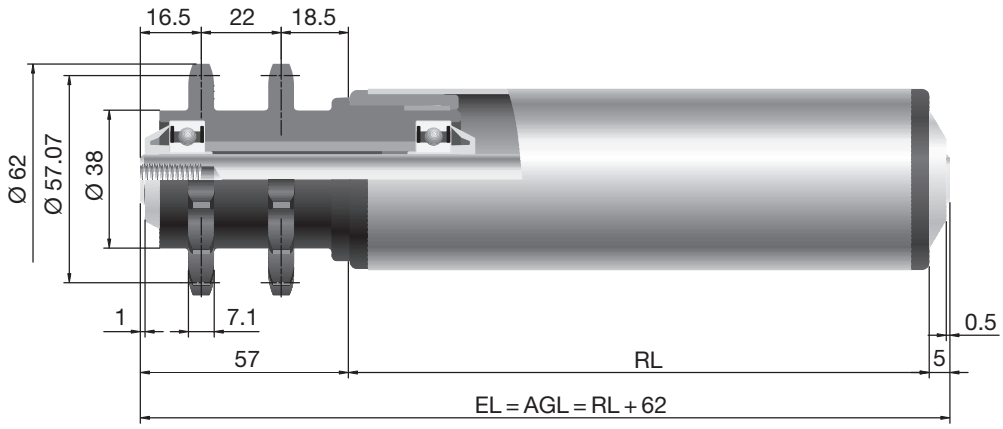
1 polyamide sprocket 1/2", Z = 11			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
PVC	50 x 2.8	Precision ball bearing	3.5CT.SAA.N90
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.5CR.JAA.N90

1 polyamide sprocket 1/2", Z = 14



1 polyamide sprocket 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
PVC	50 x 2.8	Precision ball bearing	3.5EZ.SAA.N90
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.5ER.JAA.N90
	60 x 1.5	Precision ball bearing	3.5ET.JAB.N90

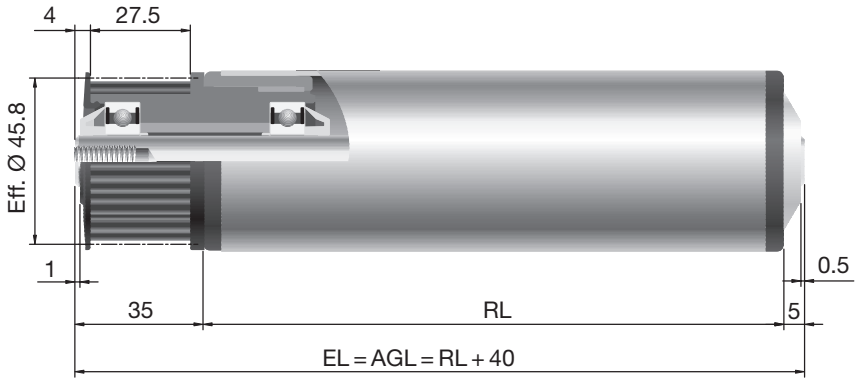
2 polyamide sprockets 1/2", Z = 14



Series 3500

2 polyamide sprockets 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
PVC	50 x 2.8	Precision ball bearing	3.5GT.SAA.N91
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.5GS.JAA.N91
	60 x 1.5	Precision ball bearing	3.5GV.JAB.N91

POM toothed belt head T = 8, Z = 18



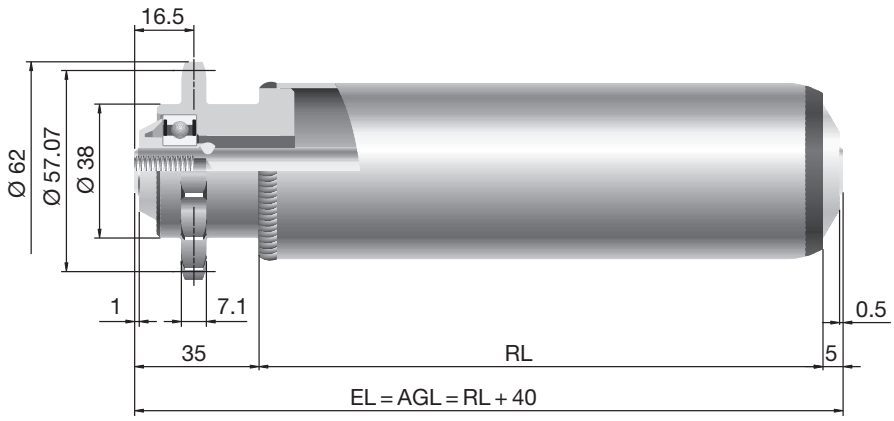
Series 3500

POM toothed belt head T = 8, Z = 18			Female threaded spindle
Tube	Tube size	Type of bearing	
	Ø mm		Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.5ZV.JAA.N90
	60 x 1.5	Precision ball bearing	3.5ZD.JAB.N90

The required motor power for toothed belt driven or V-ribbed belt driven conveyors varies considerably depending on the belt design and the particular manufacturer. Please consult the belt manufacturer for assistance in calculating the required motor power.

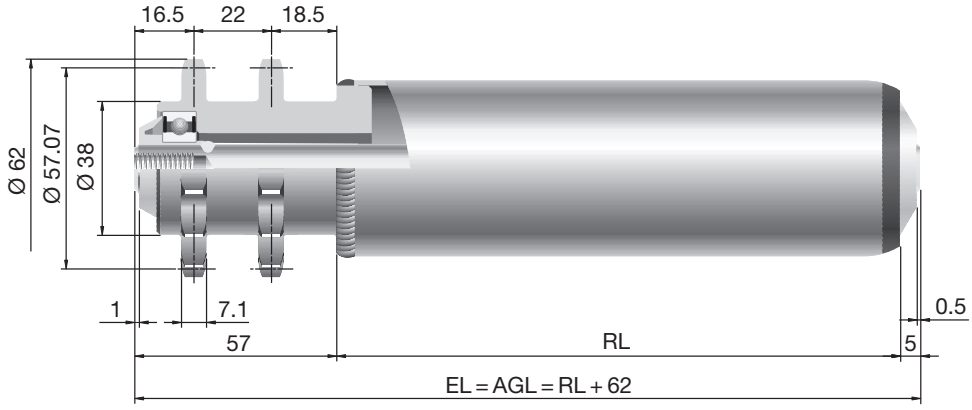
Series 3500

1 steel sprocket 1/2", Z = 14



1 steel sprocket 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.505.JA4.N90
	60 x 1.5	Precision ball bearing	3.50R.JC1.N90

2 steel sprockets 1/2", Z = 14



2 steel sprockets 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.505.JA3.N91
	60 x 1.5	Precision ball bearing	3.50R.JC2.N91

Series 3500

Load capacity (in N)

Assumptions: dynamic load, area load

EL mm	1 polyamide sprocket Z = 11 PVC tube Ø 50 x 2.8 mm Precision ball bearing Fixed Ø 14 mm	1 polyamide sprocket Z = 11 Steel tube Ø 50 x 1.5 mm Precision ball bearing Fixed Ø 14 mm	1 and 2 polyamide sprockets Z = 14 or POM toothed belt head Z = 18 Steel tube Ø 50 x 1.5 mm Precision ball bearing Fixed Ø 14 mm	1 and 2 polyamide sprockets Z = 14 or POM toothed belt head Z = 18 Steel tube Ø 60 x 1.5 mm Precision ball bearing Fixed Ø 14 mm
200	300	300	1500	1500
400	300	300	1500	1500
600	110	300	1450	1450
800	40	300	1410	1410
1000		300	1370	1390
1200		290	910	1370
1400		250	650	1150

The maximum permissible conveyor speed is 0.8 m/s for Interroll ball bearings and 1.2 m/s for precision ball bearings.

EL mm	1 and 2 polyamide sprockets Z = 14 or POM toothed belt head Z = 18 PVC tube Ø 50 x 2.8 mm Precision ball bearing Fixed Ø 14 mm	1 and 2 steel sprockets Z = 14 Steel tube Ø 50 x 1.5 mm Precision ball bearing Fixed Ø 14 mm	1 and 2 steel sprockets Z = 14 Steel tube Ø 60 x 1.5 mm Precision ball bearing Fixed Ø 14 mm
200	350	2000	2000
400	265	2000	2000
600	90	2000	2000
800	50	1830	2000
1000		1150	2000
1200		790	1390
1400		580	1020

The maximum permissible conveyor speed is 0.8 m/s for Interroll ball bearings and 1.2 m/s for precision ball bearings.

Options

For all roller series various additons are available, which are listed in the chapter Options (on page 141). Options include:

- Flanges
- Special surface treatments for tubes (hardening, grinding)
- PVC sleeve

Friction Accumulating Conveyor Roller Series 3800

Friction drive

The roller series 3800 offers the option of cost-effectively running an accumulating conveyor with limited back pressure, since comparatively few drives are required.

Between the roller liner and the drive element is a friction clutch. The driving force of the clutch depends on the load, amounting to approximately 4% – 6% of the load of the conveyed items.

In accumulating mode, by means of a pneumatic stopper for example, the drive element in the friction clutch can rotate although the roller liner is blocked by the stationary conveyed items. It is therefore not necessary to shut off the drive for accumulating mode. The conveyor can continue to run.

Depending on the total weight of the backlogged conveyor items, the back pressure can be considerable. Please consider the drive system as a whole when dimensioning the blocking device.

The friction clutch of the roller series 3800 is designed as a slide bearing with the material combinations of polyamide/polyamide or polyamide/steel (roller housing / drive head). In the roller housing are grease pockets to ensure that the clutch is lubricated throughout its service life.

Features

- Conveying and accumulating via a friction clutch between drive element and sliding bush (single friction). In conveyor rollers with a double friction clutch, the friction clutches are at both ends of the roller
- The driving force of the roller is load-dependent and adjusts automatically
- Friction accumulating conveyor rollers with single friction and Series 3500 conveyor rollers have the same dimensions. Therefore, they can easily be combined with one another and can be converted to the relevant type of drive at any time (friction/fixed drive)
- At the non-drive end there are Series 1700 roller housings. The drive end can be supplied with drive elements either made of plastic (polyamide 6.6 for sprockets, POM for toothed belt heads) or steel
- Sprockets manufactured from highly abrasion-resistant and resilient polyamide feature extremely good sound absorption compared with steel sprockets
- Steel sprockets are precision rotating parts which have an accurate meshing
- The load capacity of the roller depends on the amount of accumulating in proportion to total operating time

Load capacity
- Up to 350 N for polyamide sprockets
- Up to 500 N for steel sprockets

Dimensions
Tube
- Highly impact-resistant special PVC-Copolymer in stone grey (RAL 7030) with an outer diameter of 50 or 63 mm
- Zinc-plated steel to DIN 2394 with an outer diameter of 50 or 60 mm
- Stainless steel to DIN 2463 with an outer diameter of 50 or 60 mm
- Aluminium with an outer diameter of 50 mm

Spindle
- Bright steel or stainless steel
- Female threaded spindle (M8 x 15), diameter 14 mm
- Other spindle ends available on request

Bearing
- Bearing housing made of polyamide (black)
- Bearing seal (yellow) made of polyamide for the drive end and polypropylene for the non-drive end
- Types of bearing:
  – Interroll stainless steel ball bearing
  – Precision ball bearing 6002 2Z

Chain drive element
- Single or double sprocket head made of high-quality polyamide 6.6 or steel with plastic slide bush
- Dimensions: 1/2" x 5/16"
- Number of teeth (plastic): 9, 11 or 14
- Number of teeth (steel): 14

Toothed belt drive element
- Toothed belt head made of POM
- Dimensions:
  – Toothed belt pitch: 8 mm
  – Toothed belt width: ≤12 mm
  – Number of teeth: 18

Options, see page 141
- Antistatic version

■ = STANDARD

Series 3800

Design information

System description
The friction conveyor rollers are driven by a continuously running roller chain or toothed belt.
The drive element is connected to the body of the roller via a friction bush (slide bearing bush).
The drive is therefore effected by the friction inside the friction bush. The materials of the two friction surfaces (polyamide/polyamide or polyamide/steel) and the lubricant used are crucial to the operation of the roller.
If the items being conveyed are stopped (accumulating mode), the roller body remains stationary, and only the drive element continues to rotate. The driving force of the rollers (depending on the load) results in appropriate back pressure being applied to the items, and this pressure accumulates in proportion to the length of the pile-up.
As soon as the conveyor section is released again, the rollers, and hence the items, start moving again.

Driving force
The driving force produced by the friction roller regulates itself in relation to the weight of the conveyed items.
The driving force depends on many different factors, such as the condition of the underside of the items, moisture, temperature, grease, proportion of accumulation in relation to total operating time, etc.
Some of these factors have a considerable effect on the performance and service life of the roller. Accumuluating mode should only be employed as long as is necessary. If no transport will occur in the foreseeable future, the drive should be shut off. No energy is then spent, and the service life and performance of the conveyor system is raised.
We will gladly advise you regarding your specific application. We also recommend that you conduct a performance test using genuine items.
The driving forces indicated below are therefore not binding and are given for a standard climate (65% relative humidity and a temperature of +20 °C).

The values indicated also refer to a situation where the conveyed items are centred on the rollers. They will change considerably if the centre of gravity of the load is off-centre, and they will drop even more the further away the centre of gravity of the load is from the drive element. Flat, sturdy item undersides are ideal, which means each roller takes an equal share of the load.

Under the aforementioned conditions, the following values for driving force at the conveyor roller can be assumed:
- **4 to 6%** of the roller driving force, assuming a **single friction clutch** and roller outer diameter of **50 mm**
- **2 to 5%** of the roller driving force, assuming a **single friction clutch** and roller outer diameter of **60 mm**
- **8 to 13%** of the roller driving force, assuming a **double friction clutch** and roller outer diameter of **50 or 60 mm**
- **4 to 6%** load-dependent driving force, adjustable to approx. **12%** of the roller load through additional axial-adjustable friction clutch

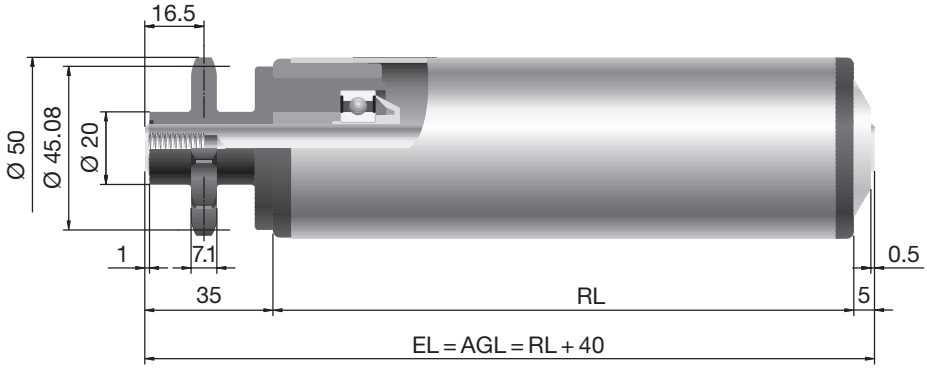
The permissible conveyor speed is 0.5 m/s.

For further design information, please refer to the section “Types of Drive” on page 11.

General Information
Flanges, as well as other lateral guides, are not recommended for friction rollers.
The driving force of the friction clutch may not be able to overcome the static friction generated.
Accumulation in curves should always be avoided with friction rollers. If accumulation is to occur in curves, this is only possible with systems not having back pressure, such as RollerDrive.

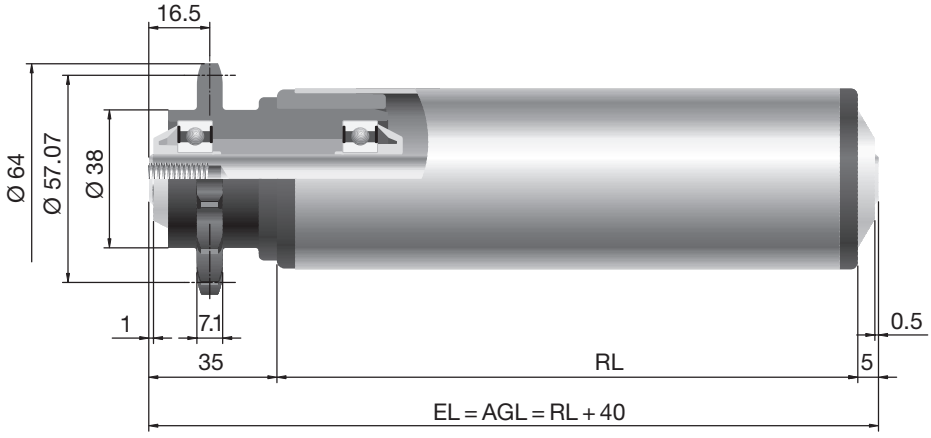
Series 3800

1 polyamide sprocket 1/2", Z = 11 (single friction)



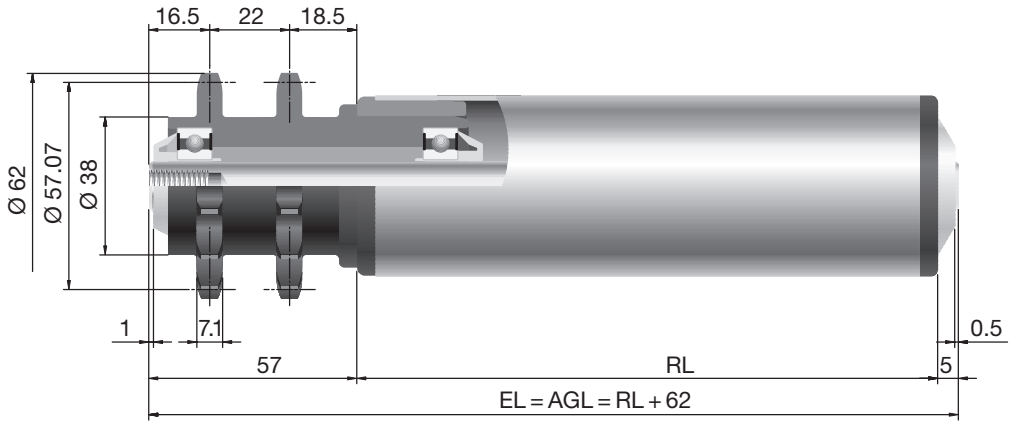
1 polyamide sprocket 1/2", Z = 11			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
PVC	50 x 2.8	Precision ball bearing	3.8CR.SAA.N90
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.8CS.JAA.N90

1 polyamide sprocket 1/2", Z = 14 (single friction)



1 polyamide sprocket 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
PVC	50 x 2.8	Precision ball bearing	3.8EZ.SAA.N90
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.8ER.JAA.N90

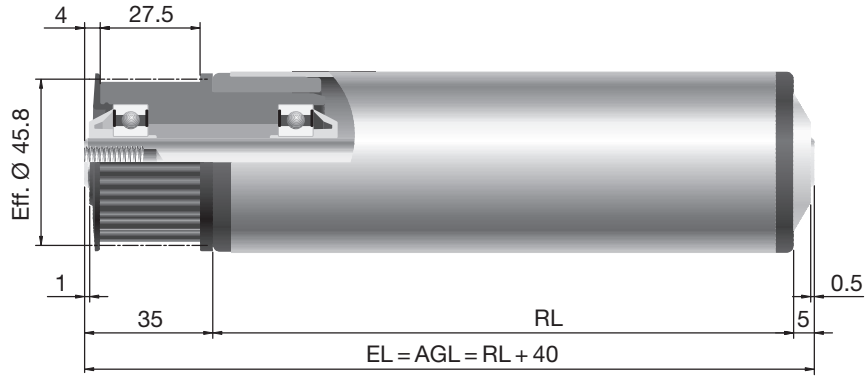
2 polyamide sprockets 1/2", Z = 14 (single friction)



Series 3800

2 polyamide sprockets 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
PVC	50 x 2.8	Precision ball bearing	3.8GT.SAA.N91
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.8GZ.JAA.N91

POM toothed belt head T = 8, Z = 18 (single friction)



Series 3800

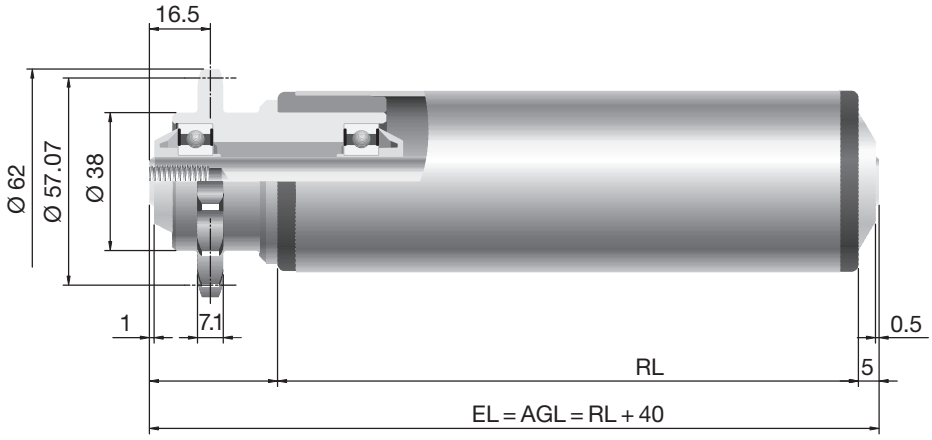
POM toothed belt head T = 8, Z = 18			Female threaded spindle
Tube	Tube size	Type of bearing	
	Ø mm		Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.8ZV.JAA.N90

Selection of required motor power

The required motor power for toothed-belt driven or V-ribbed belt driven conveyors varies considerably depending on the belt design and the particular manufacturer. Please consult the belt manufacturer for assistance in calculating the required motor power.

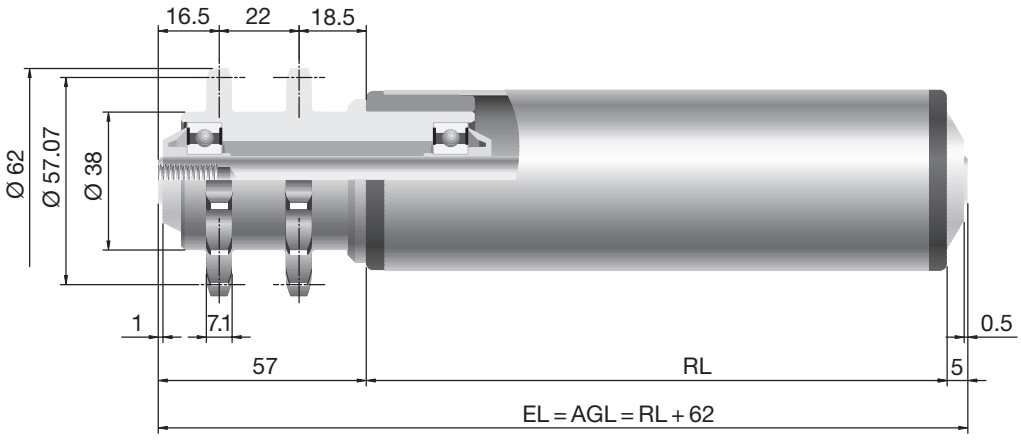
Series 3800

1 steel sprocket 1/2", Z = 14 (single friction)



1 steel sprocket 1/2", Z = 14			
Tube	Tube size Ø mm	Type of bearing	Female threaded spindle Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.8J6.JAA.N90

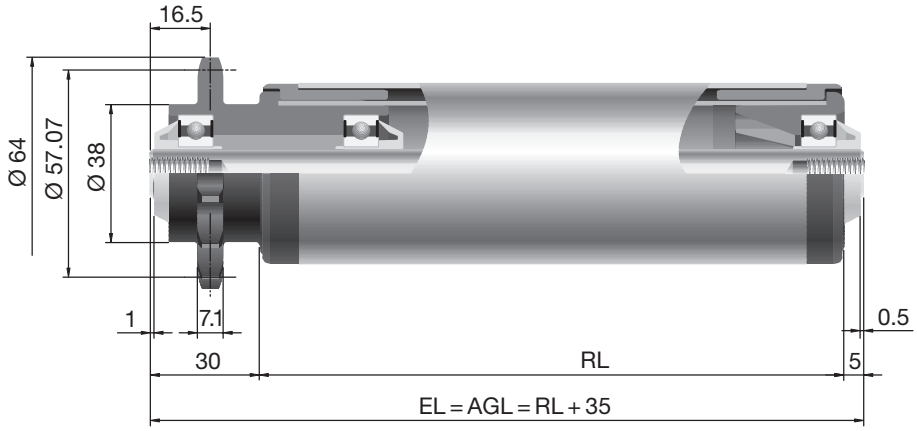
2 steel sprockets 1/2", Z = 14 (single friction)



2 steel sprockets 1/2", Z = 14			
Tube	Tube size Ø mm	Type of bearing	Female threaded spindle Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.8K9.JAA.N91

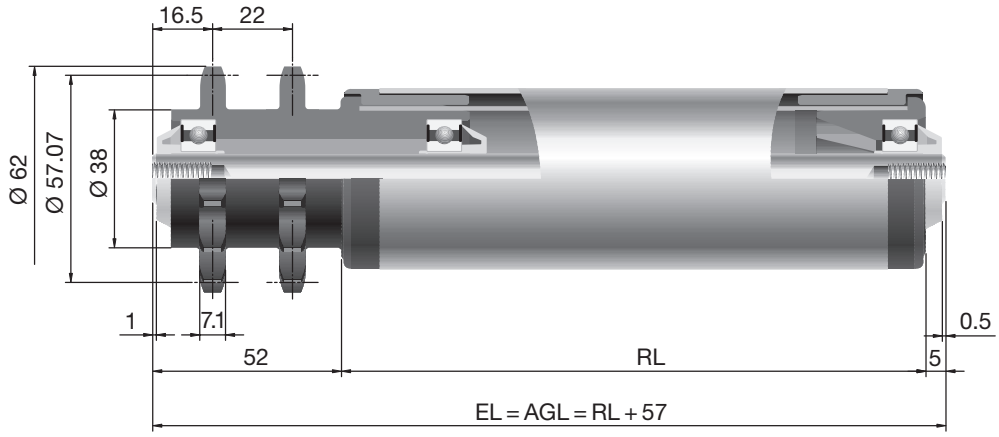
Series 3870

1 polyamide sprocket 1/2", Z = 14 (double friction)



1 polyamide sprocket 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.84P.JPB.N9C

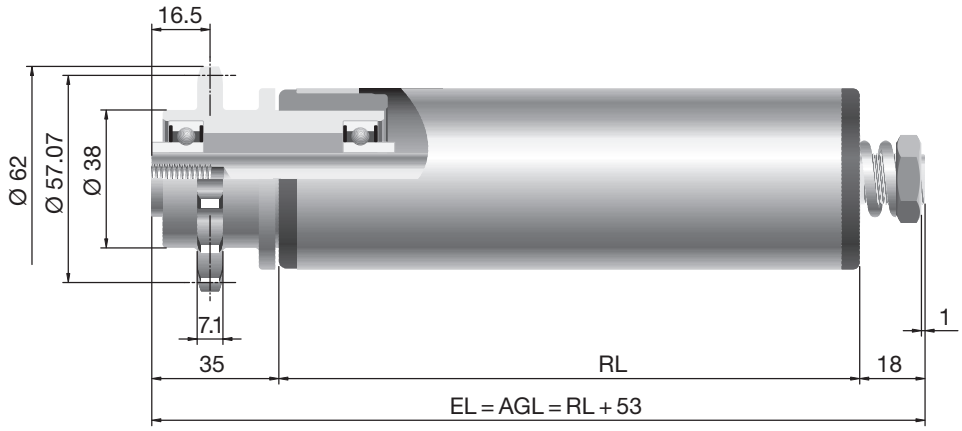
2 polyamide sprockets 1/2", Z = 14 (double friction)



2 polyamide sprockets 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.84V.JPB.N9L

Series 3800

1 steel sprocket 1/2", Z = 14 (adjustable friction)



1 steel sprocket 1/2", Z = 14			Female threaded spindle
Tube	Tube size Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
Zinc-plated steel	50 x 1.5	Precision ball bearing	3.80R.JAA.N7S



Tapered Conveyor Rollers Series 1700-KXO Series 3500-KXO

Only tapered conveyor rollers can ensure that the items are conveyed reliably in curves. The different conveying speeds around the circumference of the tapered rollers allows an optimal transport. The alignment of the conveyed items within the side walls is thereby retained, so that side guides are not absolutely necessary. Compared with straight sections, curved sections require greater installation lengths (assuming item dimensions are identical).
For reliable handling, the actual clear width of the conveyor should be approx. 50 mm larger than the calculated width. EL and RL should be selected accordingly (see catalogue, page 88).

Features of Series 1700-KXO tapered universal conveyor rollers

- Series 1700-KXO tapered conveyor rollers are based on the Series 1700 universal conveyor roller
- Tapered tube made of grey polypropylene parts; abrasion resistant, sound absorbent, impact resistant, weather resistant and temperature resistant
- Lightweight, hence good starting and running properties
- Cover on side with large diameter

Features of Series 3500-KXO tapered fixed drive conveyor roller

- Series 3500-KXO tapered conveyor rollers are based on the Series 3500 fixed drive conveyor roller
- Tapered tube made of grey polypropylene parts; abrasion resistant, sound absorbent, impact resistant, weather resistant and temperature resistant
- Sprocket heads made of highly abrasion-resistant, resilient polyamide 6.6, hence excellent sound absorption

Load capacity

- Up to 500 N

Dimensions

Tube

- Tapered elements made of polypropylene on a cylindrical inner tube made of zinc-plated steel with an outer diameter of 50 mm. The tapered elements are available for roller lengths (RL) of 250 mm to 900 mm in increments of 50 mm
- Grooves for round belts on an extended inner tube
- Only galvanised steel pipes or stainless steel pipes may be used.

Spindle

- Bright steel or stainless steel
- Female threaded spindle (M8 x 15), diameter 12 or 14 mm

Bearing

- Bearing housing made of polyamide (black)
- Bearing seal made of polypropylene (yellow)
- Types of bearing:
  - Interroll ball bearing
  - Interroll stainless steel ball bearing
  - Precision ball bearing 6002 2Z

Drive element

- Double sprocket head made of high-quality polyamide 6.6
- Dimensions: 1/2" x 5/16"
- Number of teeth: 14

Options, see page 141

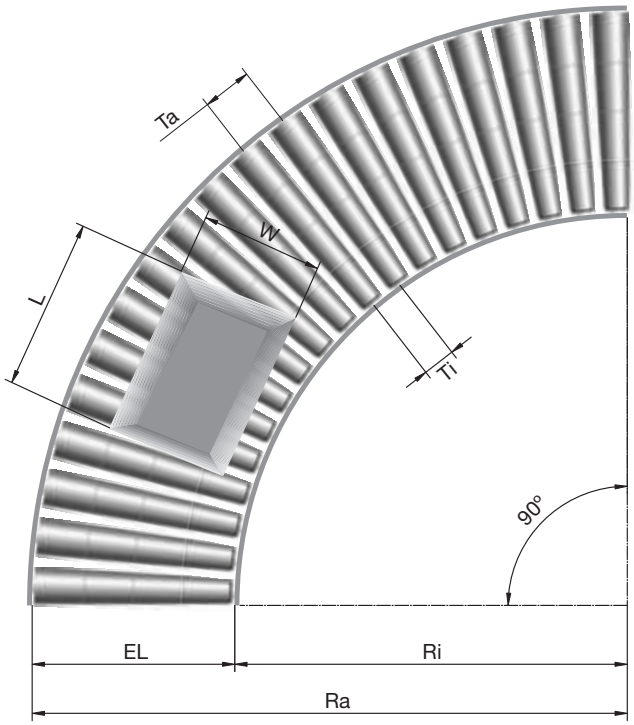
- Extended inner tube
- Inner curve radius 650 mm

■ = STANDARD

Design information

Non-driven roller curves

The nominal dimension of the curve inside radius Ri is **800 mm** for roller lengths (RL) of 300, 400, 500 mm, etc. and **850 mm** for roller lengths of 250, 350, 450 mm etc. The curve inside radius is measured from the inner edge of the inside supporting profile (i.e. from the beginning of installation length EL).



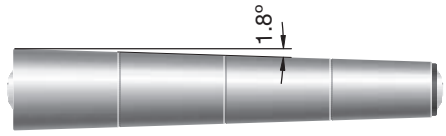
Driven curves with RollerDrive

For driven roller curves, RollerDrive has proven itself the most inexpensive and elegant solution of all well-known drive types. These curves are quiet, compact and exhibit a modern, straightforward construction.

As overdimensioned components, standard O-rings are preferably used in combination with the fixed drive roller series 3500 with drive head. Due to the projecting end of the drive head (RL=EL-36), inner curve radii of Ri 770 mm and 820 mm result.

In the dimensioning of the RollerDrive, it is important to use the mean diameter of the tapered elements for calculating the required torque and the conveyor speed. The installation length should be calculated so that the conveyed items do not contact the side profiles during transport. For this, the following steps are necessary:

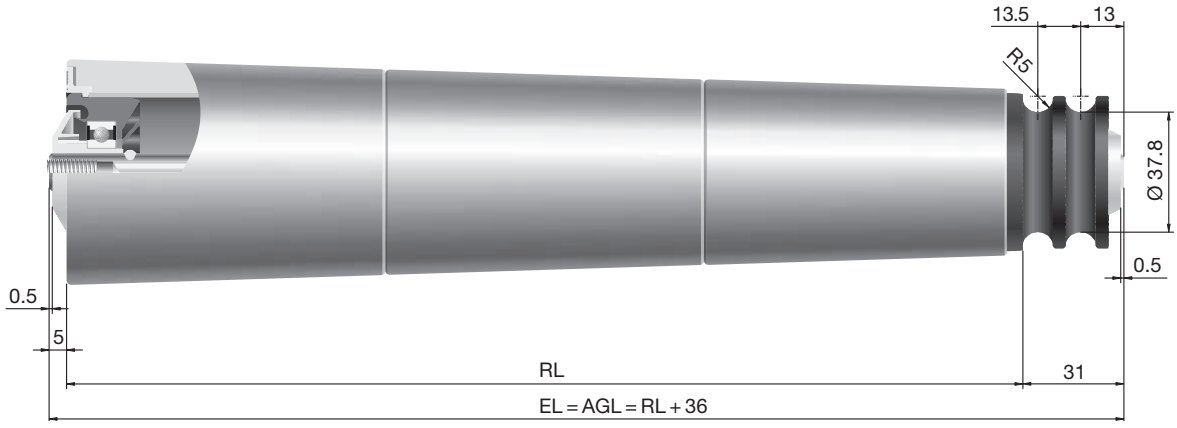
- Calculation of the minimum outer radius Ra or the minimum EL.



  - $Ra = \sqrt{(Ri + W)^2 + (L/2)^2} + 50$
  - EL min. = Ra – Ri
- Adapting of the EL min. to the standard length (next larger size in 50 mm increments)
  - 286, 336, 386 … 936 mm (250, 300, 350 … 900 mm for gravity rollers)
- Calculation of actual Ra with selected standard EL
  - Ra= EL+Ri

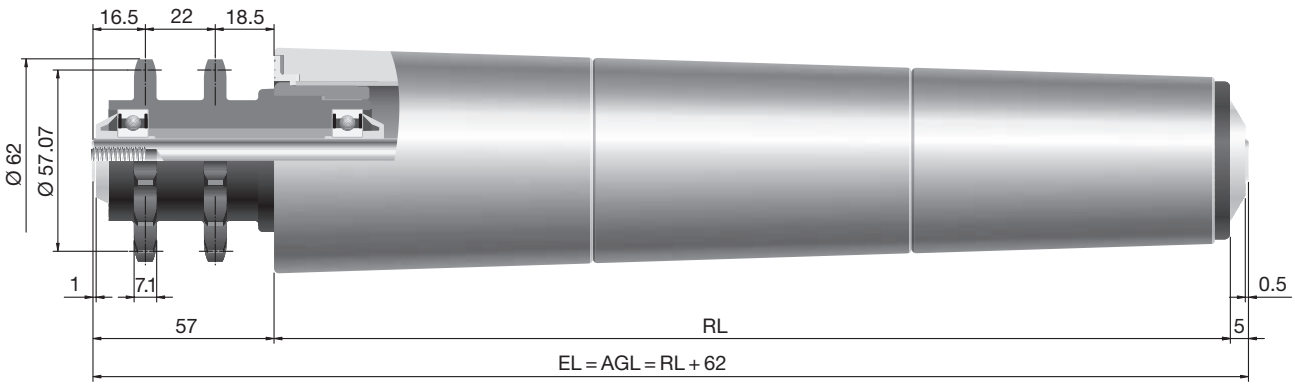
The roller pitch is generally dependent upon the properties and condition of the conveyed item and should be selected so that safe transport is ensured. In selecting the smallest possible roller pitch (Ti), the diameter of the tapered elements must be taken into account so that these do not contact each other. Otherwise, any Ti value can be selected. The only restriction to observe is that the first or last roller has a ratio to the total angle of the curve of approx. Ti/2 and that any standard belts lengths are also consided. Roller pitch Ta, measured at the inner edge of the outer profile, can be calculated with the following formula:

- $Ta = \frac{Ti \times Ra}{Ri}$



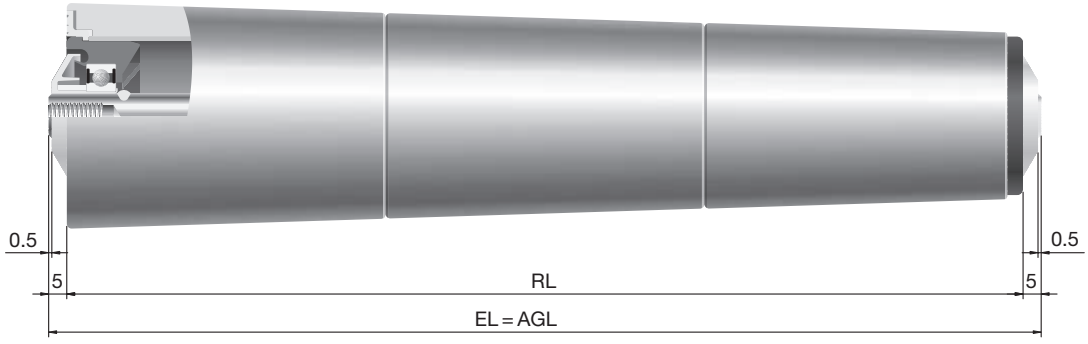
Series 3500-KXO

Tube	Roller length (RL) mm	min-Ø/ max-Ø mm	Type of bearing	Female threaded spindle Ø 14 mm (M8 x 15)
Tapered elements	250	55.6/71.2	Precision ball bearing	3.5YT.HJO.N7X
	300	52.5/71.2	Precision ball bearing	3.5YT.KJ3.N7X
on zinc-plated steel tube	350	55.6/77.6	Precision ball bearing	3.5YT.HJ1.N7X
	400	52.5/77.6	Precision ball bearing	3.5YT.KJ4.N7X
	450	55.6/84.0	Precision ball bearing	3.5YT.HJ2.N7X
with round belt head	500	52.5/84.0	Precision ball bearing	3.5YT.KJ5.N7X
	550	55.6/90.4	Precision ball bearing	3.5YT.HJ3.N7X
	600	52.5/90.4	Precision ball bearing	3.5YT.KJ6.N7X
	650	55.6/96.8	Precision ball bearing	3.5YT.HJ4.N7X
	700	52.5/96.8	Precision ball bearing	3.5YT.KJ7.N7X
	750	55.6/103.2	Precision ball bearing	3.5YT.HJ5.N7X
	800	52.5/103.2	Precision ball bearing	3.5YT.KJ8.N7X
	850	55.6/109.6	Precision ball bearing	3.5YT.HJ6.N7X
	900	52.5/109.6	Precision ball bearing	3.5YT.KJ9.N7X



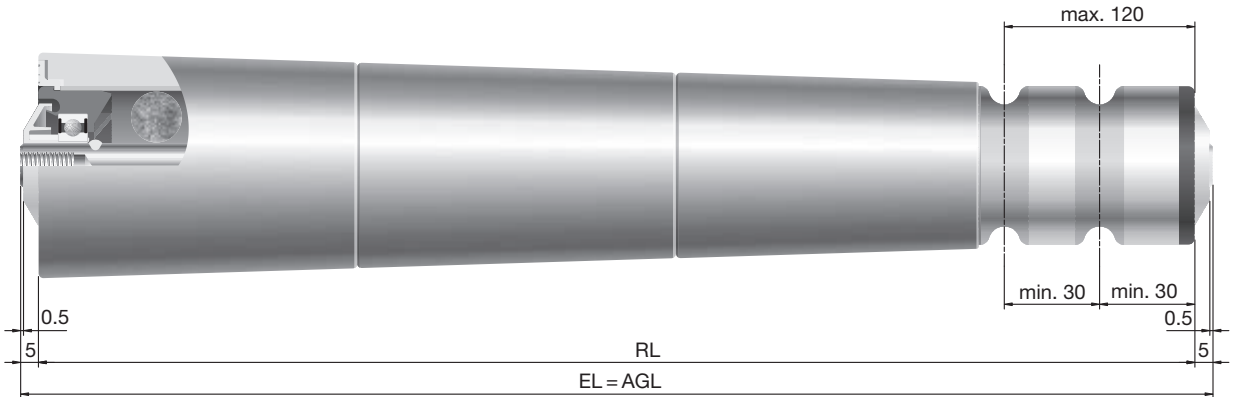
Series 3500-KXO

2 polyamide sprockets 1/2", Z = 14				Female threaded spindle
Tube	Roller length (RL) mm	min-Ø/ max-Ø mm	Type of bearing	Ø 14 mm (M8 x 15)
Tapered elements	250	55.6/71.2	Precision ball bearing	3.5KY.HJ0.N91
on zinc-plated steel tube	300	52.5/71.2	Precision ball bearing	3.5KY.KJ3.N91
	350	55.6/77.6	Precision ball bearing	3.5KY.HJ1.N91
	400	52.5/77.6	Precision ball bearing	3.5KY.KJ4.N91
	450	55.6/84.0	Precision ball bearing	3.5KY.HJ2.N91
	500	52.5/84.0	Precision ball bearing	3.5KY.KJ5.N91
	550	55.6/90.4	Precision ball bearing	3.5KY.HJ3.N91
	600	52.5/90.4	Precision ball bearing	3.5KY.KJ6.N91
	650	55.6/96.8	Precision ball bearing	3.5KY.HJ4.N91
	700	52.5/96.8	Precision ball bearing	3.5KY.KJ7.N91
	750	55.6/103.2	Precision ball bearing	3.5KY.HJ5.N91
	800	52.5/103.2	Precision ball bearing	3.5KY.KJ8.N91
	850	55.6/109.6	Precision ball bearing	3.5KY.HJ6.N91
	900	52.5/109.6	Precision ball bearing	3.5KY.KJ9.N91



Series 1700-KXO

Tube	Roller length (RL) mm	min-Ø/ max-Ø mm	Type of bearing	Female threaded spindle Ø 14 mm (M8 x 15)
Tapered elements on	250	55.6/71.2	ITRL ball bearing	1.7KD.HJ0.NAE
zinc-plated steel tube	300	52.5/71.2	ITRL ball bearing	1.7KD.KJ3.NAE
	350	55.6/77.6	ITRL ball bearing	1.7KD.HJ1.NAE
	400	52.5/77.6	ITRL ball bearing	1.7KD.KJ4.NAE
	450	55.6/84.0	ITRL ball bearing	1.7KD.HJ2.NAE
	500	52.5/84.0	ITRL ball bearing	1.7KD.KJ5.NAE
	550	55.6/90.4	ITRL ball bearing	1.7KD.HJ3.NAE
	600	52.5/90.4	ITRL ball bearing	1.7KD.KJ6.NAE
	650	55.6/96.8	ITRL ball bearing	1.7KD.HJ4.NAE
	700	52.5/96.8	ITRL ball bearing	1.7KD.KJ7.NAE
	750	55.6/103.2	ITRL ball bearing	1.7KD.HJ5.NAE
	800	52.5/103.2	ITRL ball bearing	1.7KD.KJ8.NAE
	850	55.6/109.6	ITRL ball bearing	1.7KD.HJ6.NAE
	900	52.5/109.6	ITRL ball bearing	1.7KD.KJ9.NAE

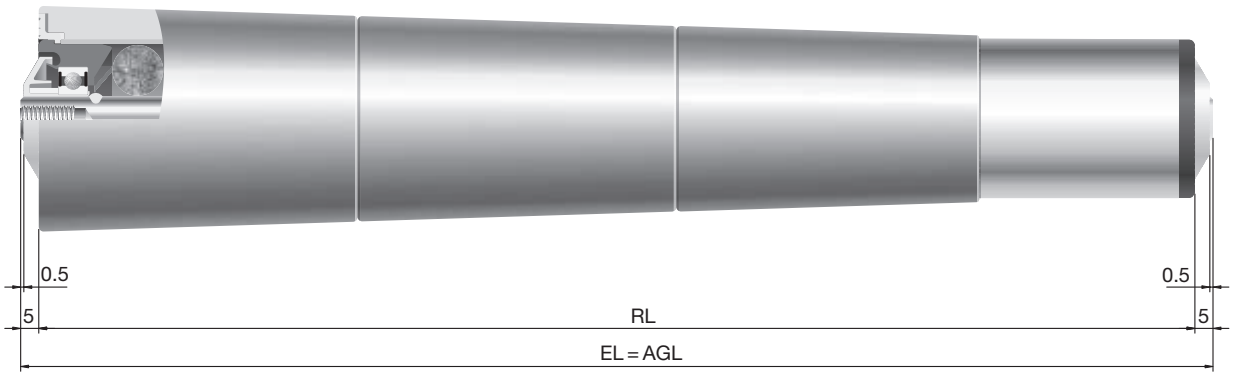


Series 1700-KXO

Tube	Roller length (RL) mm	min-Ø/ max-Ø mm	Type of bearing	Female threaded spindle Ø 14 mm (M8 x 15)
Tapered elements	250	55.6/64.8	Precision ball bearing	1.7KL.HX0.NAE
on zinc-plated steel	300	52.5/64.8	Precision ball bearing	1.7KL.KX3.NAE
tube with 2 grooves	350	55.6/71.2	Precision ball bearing	1.7KL.HX1.NAE
	400	52.5/71.2	Precision ball bearing	1.7KL.KX4.NAE
	450	55.6/77.6	Precision ball bearing	1.7KL.HX2.NAE
	500	52.5/77.6	Precision ball bearing	1.7KL.KX5.NAE
	550	55.6/84.0	Precision ball bearing	1.7KL.HX3.NAE
	600	52.5/84.0	Precision ball bearing	1.7KL.KX6.NAE
	650	55.6/90.4	Precision ball bearing	1.7KL.HX4.NAE
	700	52.5/90.4	Precision ball bearing	1.7KL.KX7.NAE
	750	55.6/96.8	Precision ball bearing	1.7KL.HX5.NAE
	800	52.5/96.8	Precision ball bearing	1.7KL.KX8.NAE
	850	55.6/103.2	Precision ball bearing	1.7KL.HX6.NAE
	900	52.5/103.2	Precision ball bearing	1.7KL.KX9.NAE

Options

- Tapered conveyor rollers with extended inner tube



Series RollerDrive

General information
As the new generation of 24 V direct current motor, RollerDrive offers an ideal platform for automated materials handling.
The future-oriented 24 V low-voltage technology meets all the demands of security, availability, output capacity, conveyor speed, etc. necessary in today's modern conveyor systems.
The RollerDrive scope of delivery has been extended so that complete kits are available as functional units: motor – electronics – conveyor logic – power supply unit – cables.

The RollerDrive series varies in the following:
BT – (brush type) equipped with brush and
EC – (electronically commutated) brushless

Additional features
- Easy installation
- High torque
- Variable speeds
- PLC-compatible control via digital I/O
- Simple integration of the control components
- High efficiency
- Requires only minimal safety measures due to 24 V technology

Versions
All RollerDrive types can be equipped with all drive elements of the roller series 3500 as torque transmission components.
It is likewise possible to use tapered elements for curve drives with all versions (except for single sprockets and V-ribbed belts).

Applications
- Conveyors with Zero Pressure Accumulation
- Driven curves
- Lifts
- Feeding and discharging
- Workstations

The content in this catalogue is only shown in brief for the RollerDrive product. For further technical details, please refer to the separate catalogue available for this product.

Minimum roller lengths
The minimum roller lengths vary according to the respective design and can be obtained from your Interroll representative.

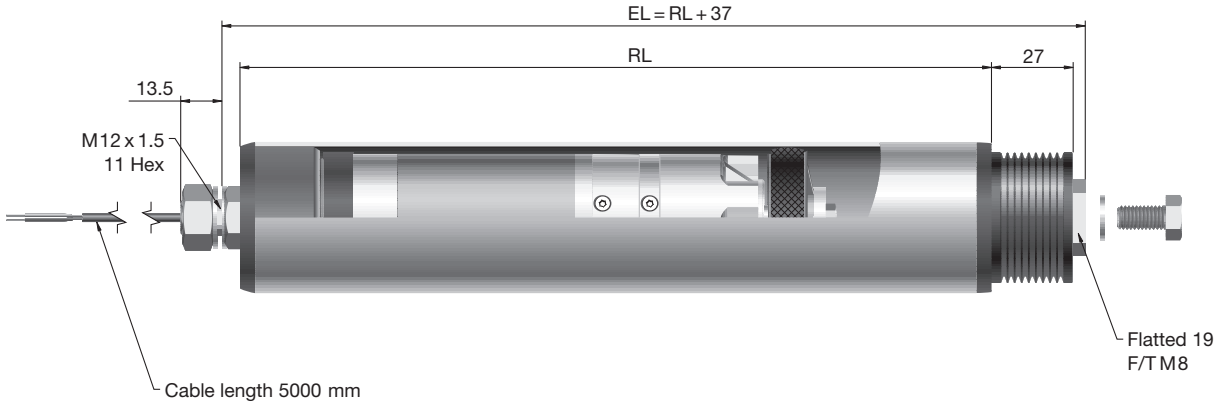
RollerDrive BT100
Brush Type

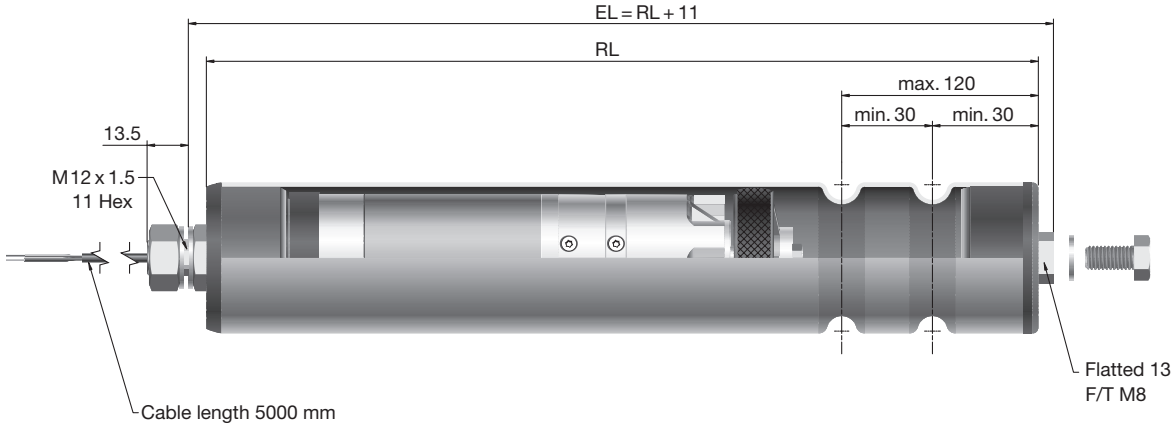
Features

The construction of the BT100 RollerDrive is ideal for conveyors of medium output without back pressure.
The BT100 is notable for its especially quiet running, with a noise level of approx. 47 dB(A).

Additional product features

- Brush type motor, optimised for use in material handling
- Applications for lightweight to medium-weight items
- Service life of approx. 6,000 operating hours (effective running time)
- Speed range 0.15 m/s – 0.9 m/s
- Actual speed varies depending on load
- Integrated thermal protection
- Noise level of approx. 47 dB(A)
- Torque 0.3 Nm – 1.20 Nm
- Maximum transport weight 50 kg
- Up to 15 starts/stops per minute
- Also available in IP66





RollerDrive BT100 Brush Type

Electrical data

Nominal voltage	24 V DC
Voltage range	16 – 28V DC
Maximum peak current / Maximum continuous current	4.5 A / 1.3 A
Output ripple of power supply unit	max. 5%

Performance data of BT100

Gear ratio	Nominal Speed m/s	Nominal Torque Nm	Peak Torque Nm
9	0.90	0.45	1.9
9R	0.70	0.70	2.6
21	0.40	0.84	3.0
30	0.30	1.28	4.4
37	0.20	1.64	6.6
37R	0.10	2.50	6.4

DriveControl BT100

The BT100 version can be controlled directly through switches or relays.

There is also the option of using the DriveControl BT100. Power transistors on the DriveControl BT100 switch the RollerDrive so that it is free from wear. The DriveControl BT100 also limits the current and thus protects the RollerDrive.

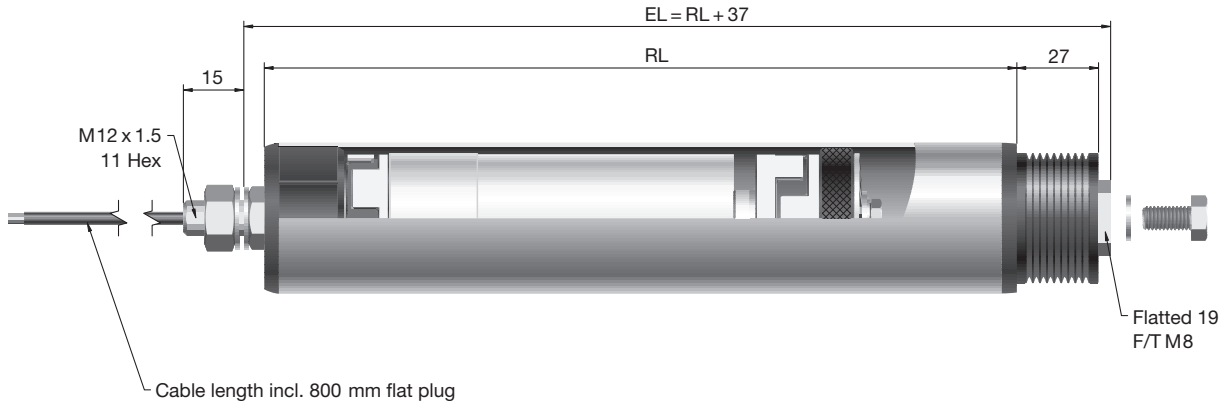
Product features

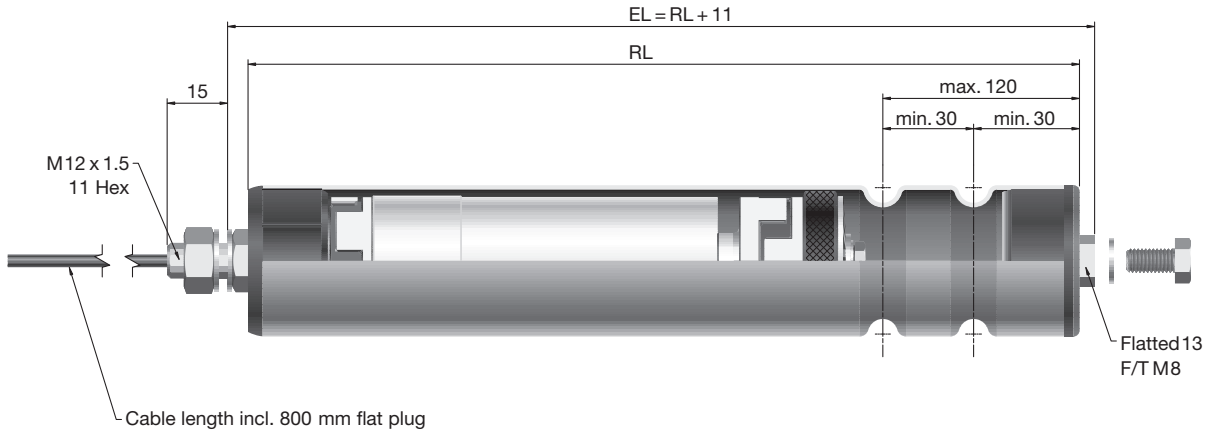
- The power electronics switches the BT100
- Choice of rotational direction

RollerDrive EC100 Brushless

Features
The brushless motor of the EC100, in connection with ruggedly designed gearing, is the ideal version of the Interroll RollerDriver series for applications with heavy loads of up to 120 kg and a simultaneous high output requirement. Design improvements have allowed soundproofing of the motor gear unit, lowering its noise level to under 55 dB(A).

Additional product features
- Brushless motor
- Service life of at least 15,000 operating hours
- Speed range 0.17 m/s – 0.35 m/s
- Constant speed
- Noise level of approx. 55 dB(A)
- Torque 0.6 Nm – 4.5 Nm
- Maximum transport weight 140 kg
- 7 different planetary gear boxes
- Up to 30 starts/stops per minute





RollerDrive EC100 Brushless

Electrical data

Nominal voltage	24 V DC
Voltage range	22 – 28V DC
Maximum peak current / Maximum continuous current	4,1 A / 1,8 A
Output ripple of power supply unit	max. 5%

Performance data of EC100

Gear Ratio	Speed Range m/s	Nominal Torque Nm	Peak Torque Nm
12	1.32 – 0.44	0.37	1.4
16	1.03 – 0.34	0.48	1.8
24	0.69 – 0.22	0.75	2.8
36	0.44 – 0.15	1.17	3.8
48	0.35 – 0.12	1.24	5.0
64	0.25 – 0.08	1.82	6.1
96	0.17 – 0.06	3.00	11.3

DriveControl EC100

The DriveControl EC100 is the driver card for the RollerDrive EC100. It contains the switching electronics, a 4-quadrant regulator and is absolutely necessary for the operation of the EC100 RollerDrive.
A controller allows regulation of the speed and conveying direction. The conveying speed can be modified externally via an analogue signal (0 – 5 V). In addition, a potentiometer on the controller enables fixed setting of the speed.
The system is controlled either through PNP or NPN logic, which can be selected via a switch.
The controller protects the RollerDrive EC100 from overload and thereby resulting damage.
This controller provides the RollerDrive EC100 with an electronic brake ("zero motion hold"), which enables its use in inclining and declining conveyors.

Additional product features
- Universal interface
- Surge protection
- Microprocessor for optimised load-dependent power supply for the RollerDriver

The following functions can be regulated:
- Start/stop
- Rotational direction right/left
- Pickup of an active fault signal
- Holding brake (zero motion hold)
- Speed regulation via an analogue signal

RollerDrive EC200 Brushless

Features

The newest development of the RollerDrive series is the EC200. As with the EC300, the use of a brushless motor with integrated electronics also allows this to be operated without external controller electronics.

The EC200 is suitable for applications with high outputs and conveyor weights of up to 100 kg.

This RollerDrive is optionally offered with protection grade IP66 and is ideal for applications in the food industry.

With its many features and a service life of at least 15,000 hours, the EC200 is an all-round talent.

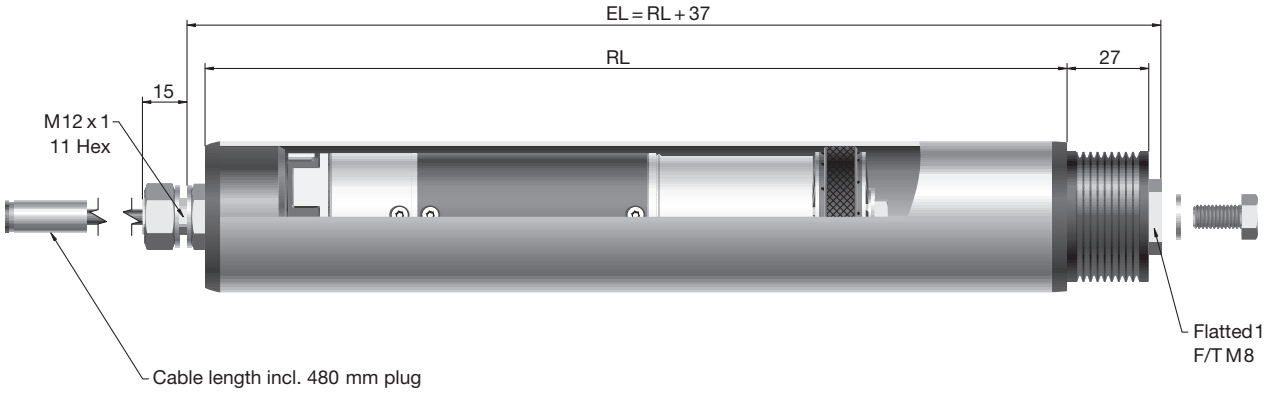
Additional product features

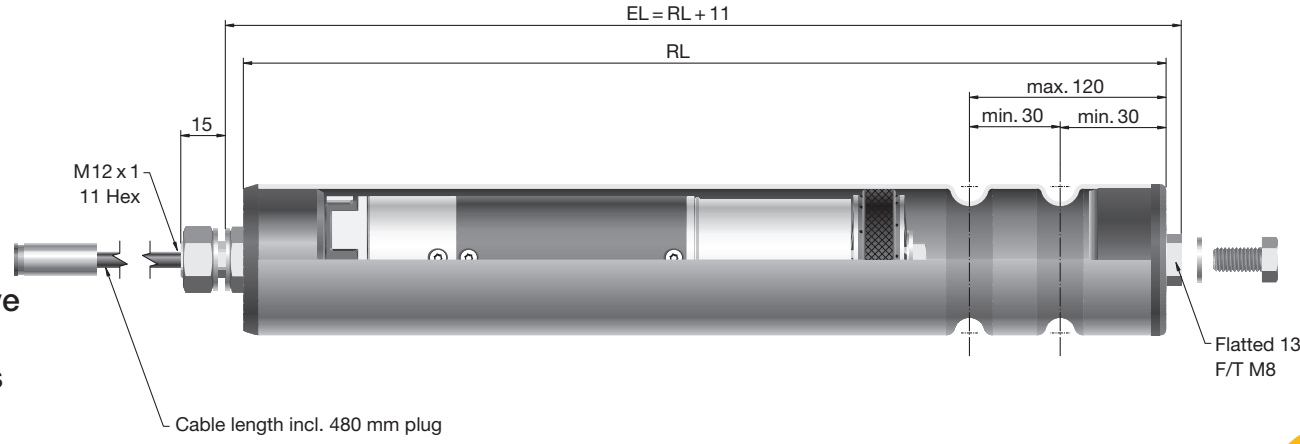
- Brushless motor
- Integrated switching electronics
- Service life of at least 15,000 operating hours
- Cable extension to 5 m total length
- Speed range of 0.04 m/s – 0.73 m/s
- Constant speed, load-independent
- Noise level of approx. 55 dB(A)
- Block pulsing with monitoring of running
- Temperature monitoring
- Torque 1.5 Nm – 3.4 Nm
- Maximum transport weight 100 kg
- Up to 30 starts/stops per minute

- **Available in IP66 version**

Option

- Extension cord with plug 1.6 m





RollerDrive EC200 Brushless

Electrical data

Nominal voltage	24 V DC
Voltage range	18 – 28 V DC
Maximum peak current / Maximum continuous current	5.5 A / 2.1 A
Output ripple of power supply unit	max. 3 %

Gear Ratio	Speed Range m/s	Nominal Torque Nm	Peak Torque Nm
12	0.98 – 0.14	0.7	1.2
16	0.74 – 0.11	0.9	1.8
36	0.33 – 0.05	1.7	3.6
48	0.25 – 0.04	2.3	5.4
64	0.18 – 0.03	3.6	8.0

DriveControl EC200

The DC EC200/300 (13:1) is used as the controller.
For a description of this, see page 104.

RollerDrive EC300 Brushless

Features

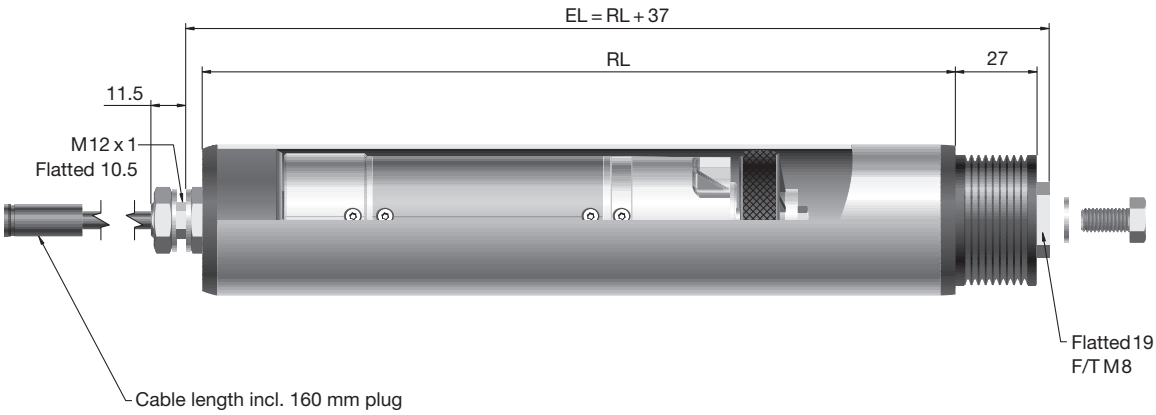
The use of a brushless motor with integrated electronics allows this RollerDrive to be operated without external controller electronics. The EC300 is thereby particularly suited to applications with extreme output and a high start/stop frequency. The use of high-quality materials, precision construction of the gears and well-directed design improvements has allowed the service life to be extended to a guaranteed minimum of 20,000 operating hours. The noise level lies at approx. 50 dB(A). The overall concept is directed toward a long service life under hard operating conditions, as well as a high start/stop frequency.

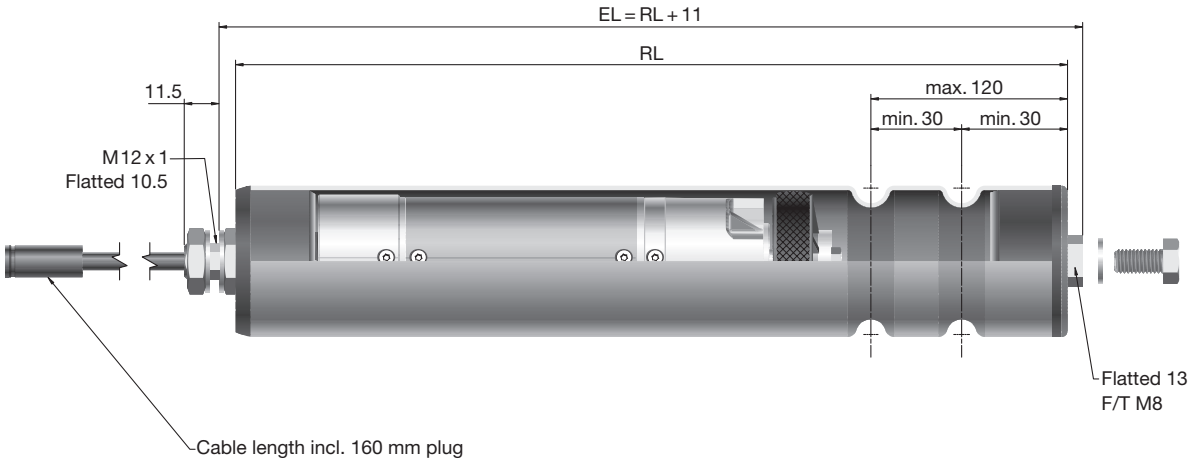
Additional product features

- Brushless motor
- Integrated switching electronics
- Service life of at least 20,000 operating hours
- Cable extension to 5 m total length
- Speed range 0.12 m/s – 2.0 m/s
- Constant, load-independent speed
- Block pulsing with monitoring of running
- Temperature monitoring
- Noise level of approx. 50 dB(A)
- Torque 0.8 Nm – 1.0 Nm
- Maximum transport weight 50 kg
- Up to 30 starts/stops per minute

Option

- Extension cord with plug 1.6 m





RollerDrive EC300 Brushless

Electrical data

Nominal voltage	24 V DC
Voltage range	18 – 28 V DC
Maximum peak current / Maximum continuous current	5.5 A / 3.5 A (13:1) 4 A (7.85:1)
Output ripple of power supply unit	max. 3 %

Performance data of EC300

Gear Ratio	Speed Range m/s	Nominal Torque Nm	Peak Torque Nm
7.85	2.00 – 1.02	0.70	1.0
13	1.27 – 0.12	0.90	1.6

DriveControl EC200/300

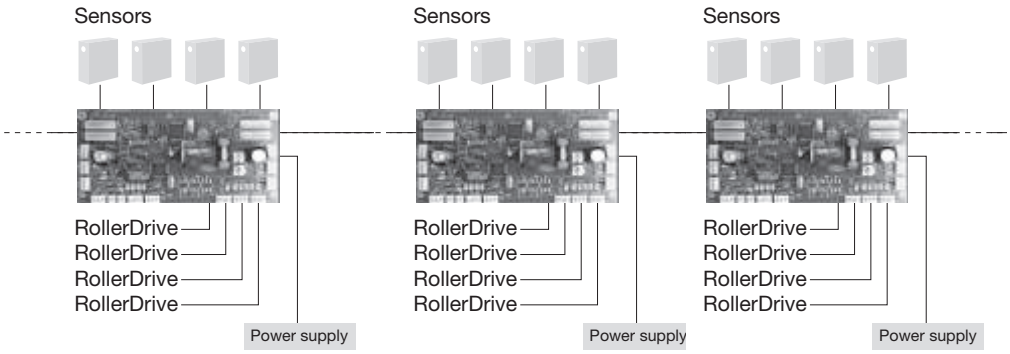
In order to simplify the controller design and enable integration of both the EC200 and the EC300, a univeral interface was developed. In addition to various controllers, the DriveControl also contains safety devices, which protect the EC200 and EC300 from polarity reversal of the voltage supply. We recommend that you always use this universal interface, since direct control can only be carried out safely with adequate technical know-how. We reserve the right to decline any warranty claims if the EC200/EC300 is used without DriveControl.

Additional product features

- Universal interface
- Galvanised separation of inputs and outputs
- Active polarity reversal protection

The following functions can be regulated:

- Start/stop
- Rotational direction right/left
- 7 speeds for EC200, can be set via rotary encoder switch
- 8 speeds for EC300, can be set via rotary encoder switch
- Pickup of an active fault signal



Z-card module

Features

The Z-card module offers you the option of configuring a conveyor without back pressure to your individual requirements. The control modules are matched to the respective RollerDrive types, i. e. a distinction is made between brush-type and brushless motors.
Each Z-card can control a maximum of 4 RollerDrive units; the control system can be extended on a modular basis.

Additional product features

- Various conveyor programs can be selected via rotary encoder switch
- Single haul-off
- Block haul-off
- Single haul-off with PLC stop
- Motor start via external signal
- Communication from Z-card to Z-card
- PNP and NPN sensors can be connected
- Handshake to external control unit
- Fault signal can be picked up
- Current limiting

Complete functional units

The RollerDrive program has a modular design. In order to offer complete functional units (kits), all power supply units as well as ready-sized cables have been integrated into the delivery scope. All individual components are optimally matched to each other and they then universally receive the protection class IP54.

The Z-card system can be extended on a modular basis as shown above.
The following is applicable for each Z-card:

- 4 RollerDrive units
- 4 sensors
- 1 power supply unit
- Communication with external control unit or adjacent Z-cards



SERIES 1450

	Description	Series	Page	Additional options	Page
Series 1450	Heavy-duty conveyor roller	1450	110		141
	Heavy-duty conveyor roller	3600	112		141
	Heavy-duty conveyor roller	3950	120		141



Max. load capacity dynamic	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
5,000 N	0.8 m/s	80, 89 mm	●	●	
3,500 N	0.8 m/s	80, 89 mm	●		
5,000 N	0.8 m/s	80, 89 mm	●		

Series 1450

Series 1450
Series 3600
Series 3950

Series 1450

The construction, dimensioning and materials of the Series 1450 are designed for the highest loads from heavy individual weights. The drive elements of the series, such as sprockets or toothed belt heads, are manufactured from glass fibre reinforced polyamide or POM. The bearing housing on the non-drive end, as well as the seal, are made of polyamide.

The drive elements are built into the tube and protected against twisting through a form-fitted connection.

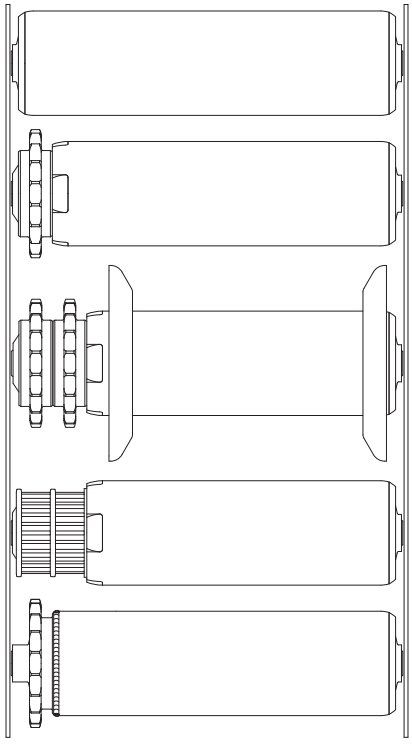
Precision ball bearings 6205 2Z are used for the standard versions, or 6204 2Z for the alternative solid steel version for freezer applications.

In order to ensure optimal corrosion protection, bright steel parts (drive heads, flanges) are completely coated in galvanised zinc-plating after welding. All welds are continuous around the entire circumference and not merely on portions.

Material properties of Series 1450

- Temperature range –5 °C to +40 °C for standard version, to –28 °C for freezer version with steel roller housing
- Polyamide is resistant to oils, petrol and alcohol
- Polyamide is not resistant to acids
- POM is resistant to most solvents and watery alkaline solutions
- POM is not resistant to acids

Series 1450



Heavy-duty conveyor roller
Series 1450
Page 110

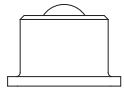
Heavy-duty conveyor roller
Series 3600
Polyamide sprocket
Page 112

Heavy-duty conveyor roller
Series 3600
with flange
Page 112

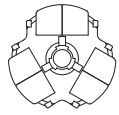
Heavy-duty conveyor roller
Series 3600
Plastic toothed belt head
Page 117

Heavy-duty conveyor roller
Series 3950
Steel sprocket
Page 120

Series peripheral equipment



Ball transfer units
Series 5000
Page 140



Omniwheels
Series 2580
Page 130

Heavy-duty Conveyor Roller Series 1450

Features
- Suitable for heavy conveyed items, particularly for transport of pallets and containers
- Rounded roller ends for easy sliding of items onto the conveyor laterally
- Secured bearing seat
- Low-noise running through use of plastic bearing housings and seals
- Sealing lips in front of the ball bearing as protection against dust or splashing water
- Max. conveyor speed 2 m/s

Load capacity
- Up to 5,000 N

Dimensions

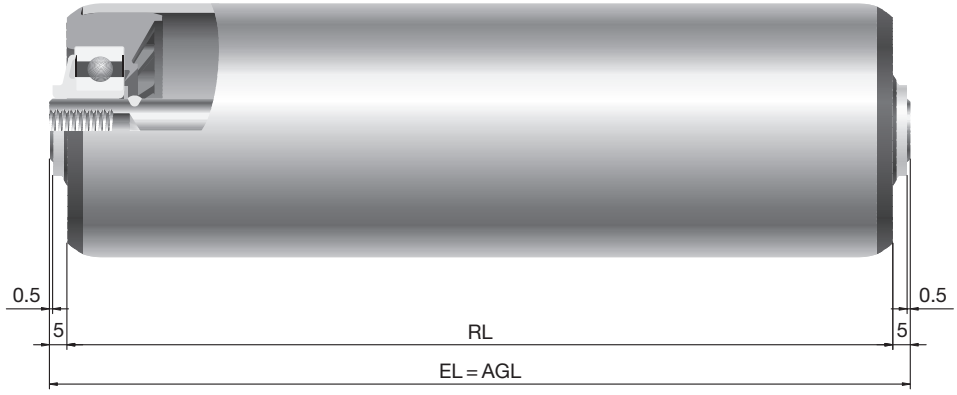
Tube
- Zinc-plated steel to DIN 2394 with 80 or 89 mm outer diameter
- Stainless steel to DIN 2463 with an outer diameter of 80 or 89 mm

Spindle
- Bright steel or stainless steel
- Spindle with milled flats, diameter 20 or 25 mm
- Male threaded spindle, diameter 20 mm
- Female threaded spindle (M10 x 20 or M12 x 20), diameter 20 or 25 mm

Bearing
- Bearing housing made of polyamide (black)
- Bearing seal made of polyamide (yellow)
- Bearing housing made of steel (zinc-plated) for freezer applications
- Types of bearing:
  – Precision ball bearing 6205 2Z

Options, see page 141
- Flanges
- Elastic PVC sleeve (only for 80 mm outer tube diameter)

■ = STANDARD



Series 1450

Load capacity (in N)

Female threaded spindle

Spindle Ø mm	Thread mm	Roller Ø mm	RL = EL– mm
20	M10/12 x 20	80/89	10

Tube	Tube size Ø mm	Type of bearing	Female threaded spindle	
			Ø 20 mm (M10 x 20)	Ø 20 mm (M12 x 20)
Zinc-plated steel	80 x 2	Precision ball bearing	1.450.JAC.S12	1.450.JAC.S03
	80 x 3	Precision ball bearing	1.453.J8A.S12	1.453.J8A.S03
	89 x 3	Precision ball bearing	1.455.J8B.S12	1.455.J8B.S03

Assumptions: dynamic load, area load

	Steel tube		
	Ø 80 x 2 mm Fixed	Ø 80 x 3 mm Fixed	Ø 89 x 3 mm Fixed
EL mm	Ø 20 mm	Ø 20 mm	Ø 20 mm
200	5000	5000	5000
↓	↓	↓	↓
1000	5000	5000	5000
1200	4400	5000	5000
1400	3200	4630	5000
1600	2440	3520	4910
1800	1920	2770	3860
2000	1550	2240	3120

The maximum permissible conveyor speed is 2.0 m/s.

Heavy-duty Conveyor Roller Series 3600

Features
- Series 3600 conveyor rollers are based on the Series 1450 heavy-duty conveyor roller
- At the non-drive end there are Series 1450 roller housings. The drive end can be supplied with either polyamide sprockets (polyamide 6.6) or a toothed belt head (POM)
- Sprockets manufactured from highly abrasion-resistant and resilient polyamide feature extremely good sound absorption and high dimensional stability (also for tangential drive)
- Castellated tube at the drive end prevents the drive element from turning in the tube
- Ball bearing is well protected by an integrated bearing seal

Load capacity
- Up to 3,500 N

Dimensions
Tube
- Zinc-plated steel to DIN 2394 with 80 or 89 mm outer diameter
- Flanges

Spindle
- Bright steel
- Female threaded spindle (M12 x 20), diameter 20 mm
- Other spindle ends available on request

Bearing
- Bearing housing (black) and bearing seal (yellow) made of polyamide
- Types of bearing:
  – Precision ball bearings 6204 2Z; 6205 2Z

Chain drive element
- Single or double sprocket head made of high-quality polyamide 6.6
- Dimensions: 5/8" x 3/8"
- Number of teeth: 15 or 18

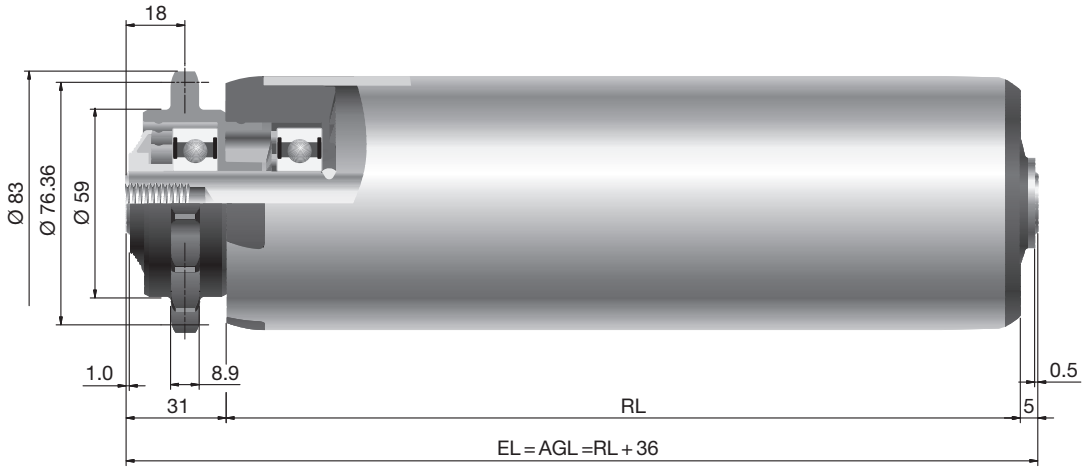
Toothed belt drive element
- Toothed belt head made of POM
- Dimensions:
  – Toothed belt pitch: 8 mm
  – Toothed belt width: 20 mm
  – Number of teeth: 25

Options, see page 141
- Zinc-plated steel tube, Ø 80 x 2 mm

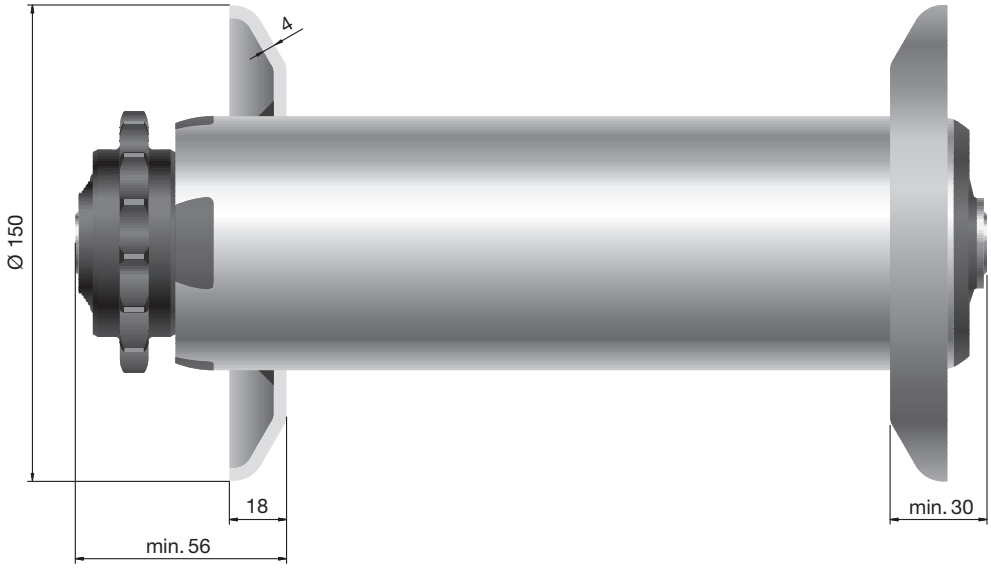
Design information
- See chapter “Types of Drive” page 11

■ = STANDARD

1 polyamide sprocket 5/8", Z = 15

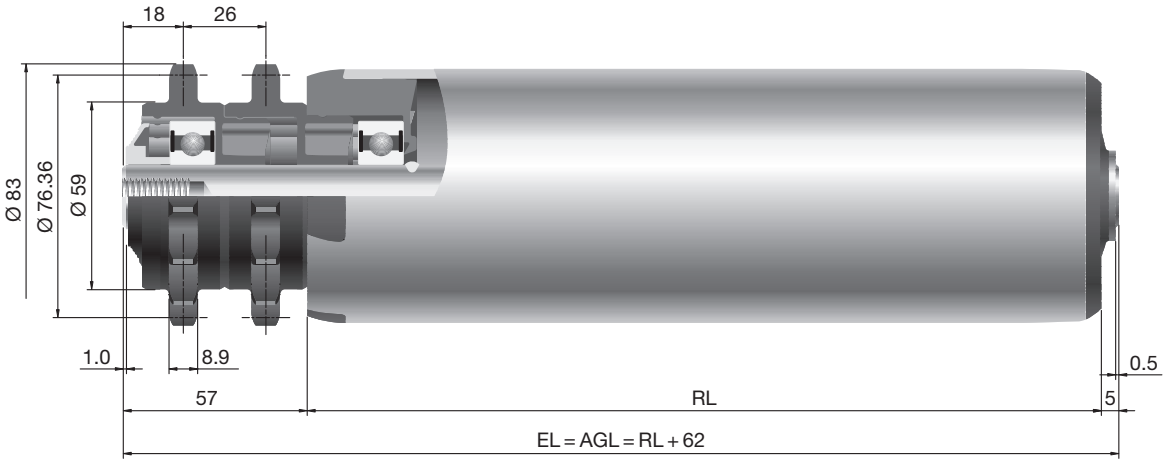


Series 3600

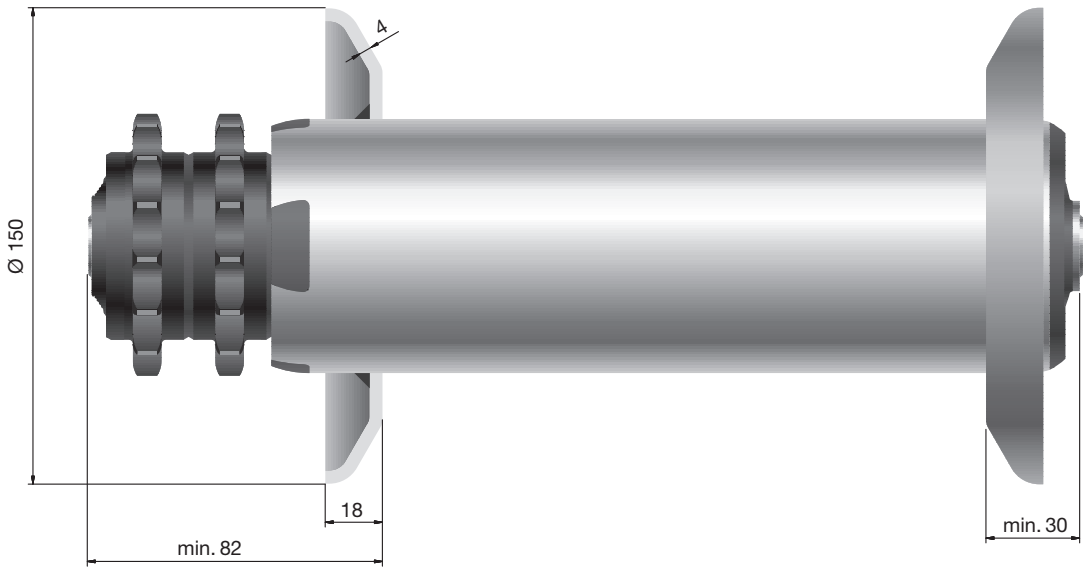


1 polyamide sprocket 5/8", Z = 15			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.6AC.J8E.S42	3.6AC.J8D.S42
	89 x 3	Precision ball bearing	3.6AE.J90.S42	3.6AE.J8C.S42

2 polyamide sprockets 5/8", Z = 15

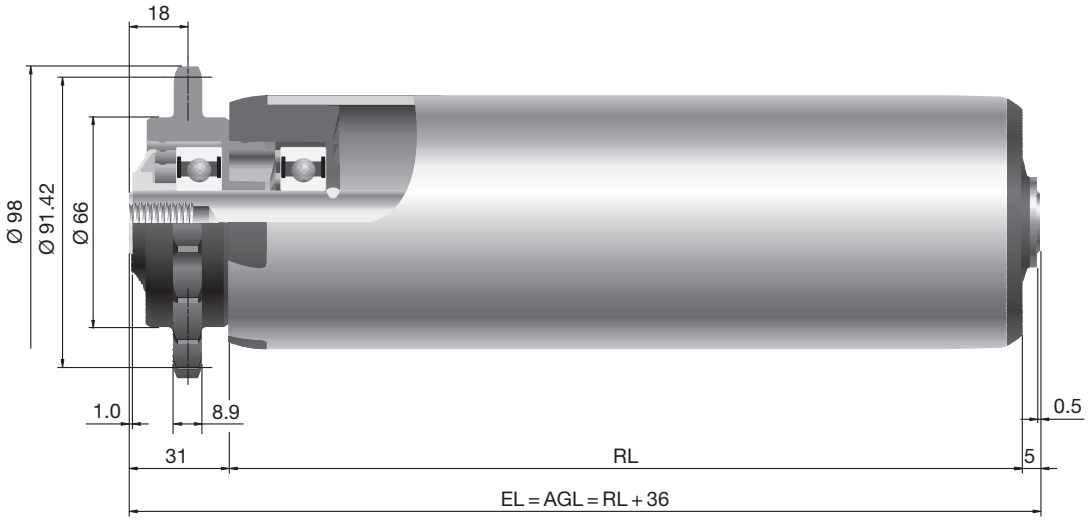


Series 3600

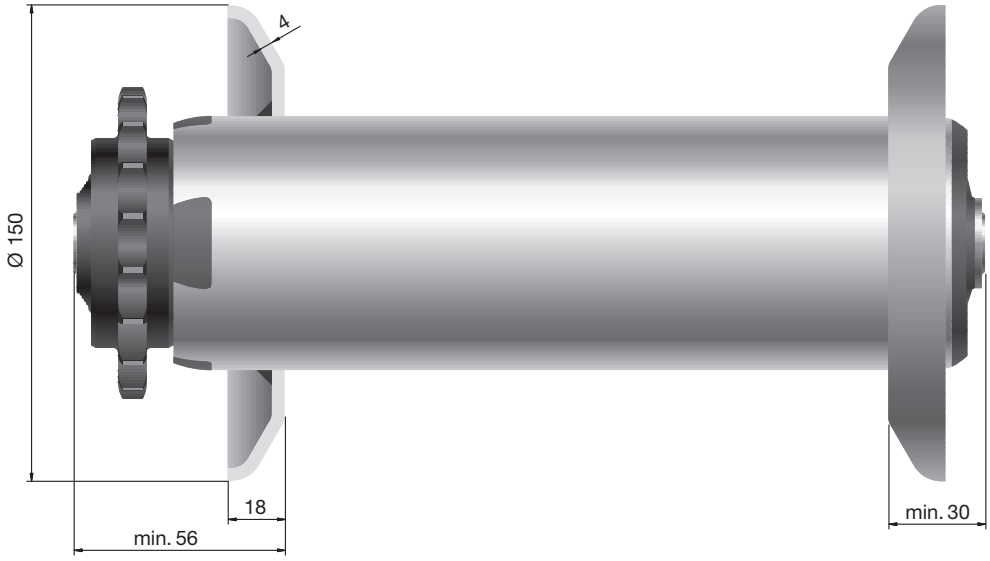


2 polyamide sprockets 5/8", Z = 15			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.6AD.J8E.S38	3.6AD.J8D.S38
	89 x 3	Precision ball bearing	3.6AF.J90.S38	3.6AF.J8C.S38

1 polyamide sprocket 5/8", Z = 18



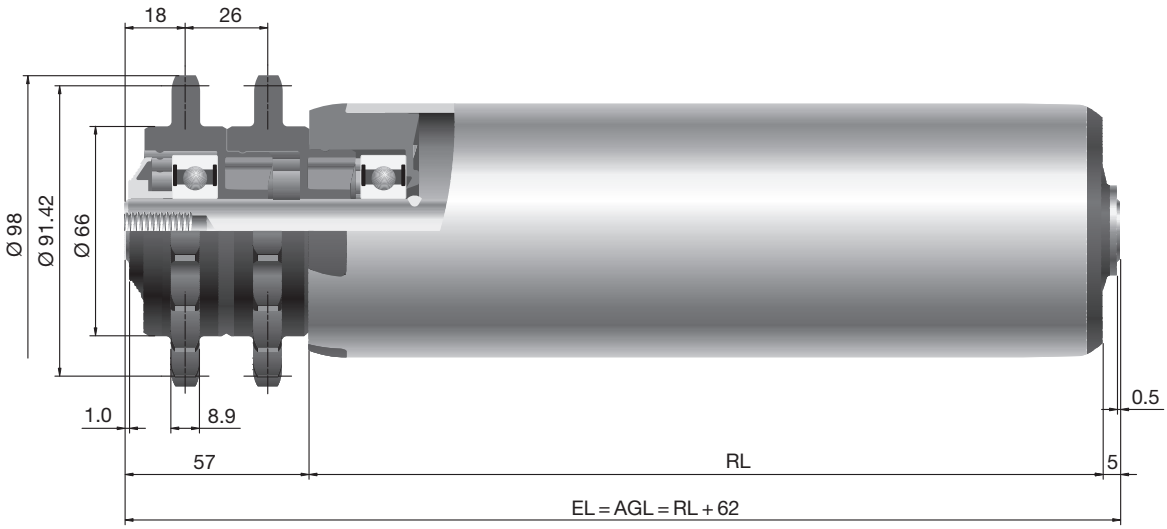
Series 3600

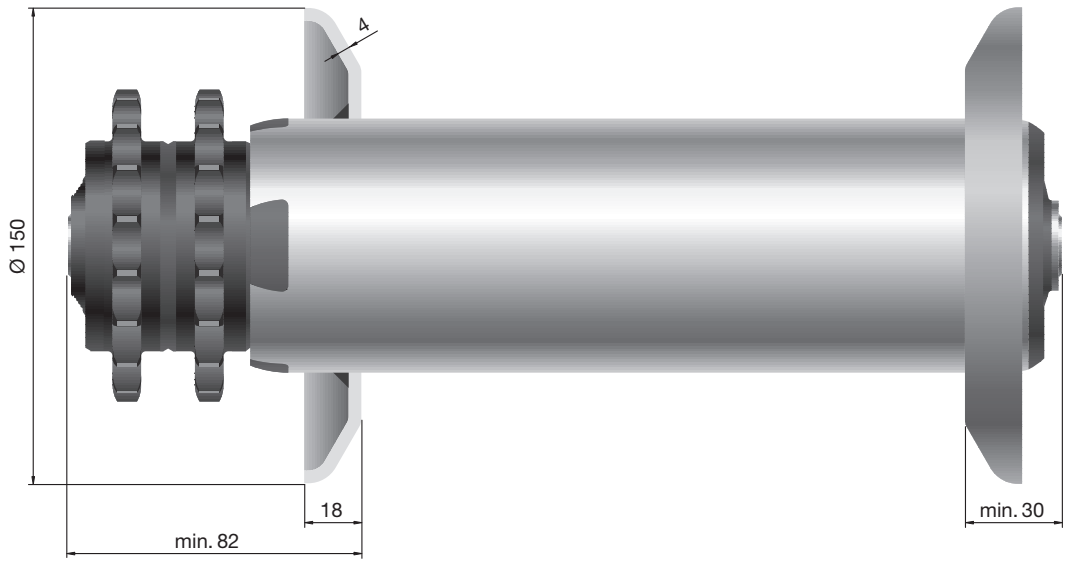


1 polyamide sprocket 5/8", Z = 18			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.6AJ.J8E.S42	3.6AJ.J8D.S42
	89 x 3	Precision ball bearing	3.6AL.J90.S42	3.6AL.J8C.S42

Series 3600

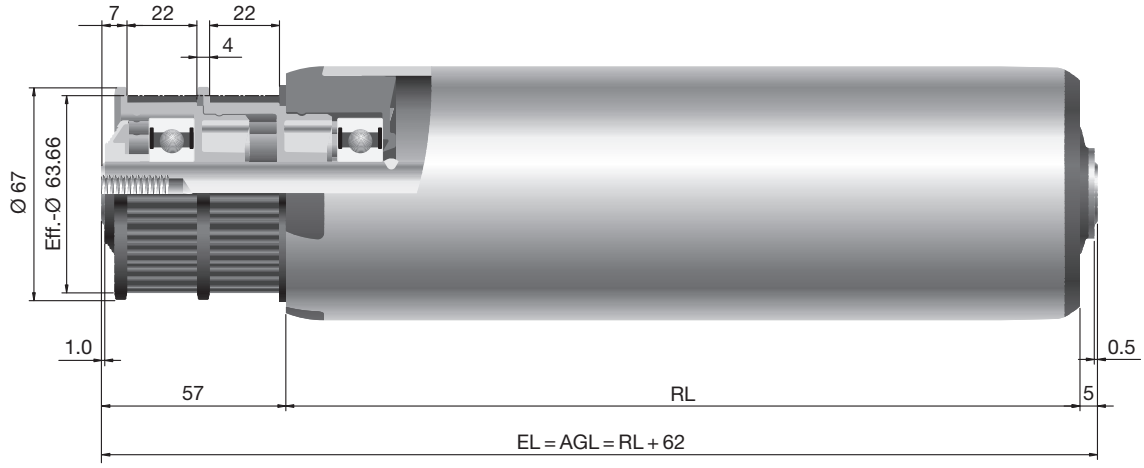
2 polyamide sprockets 5/8", Z = 18



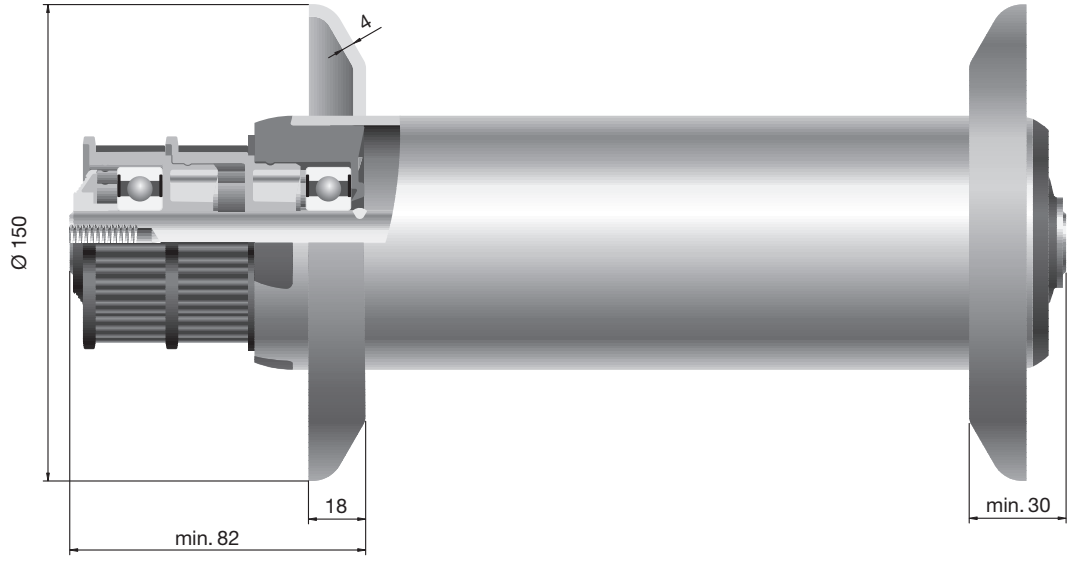


2 polyamide sprockets 5/8", Z = 18			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.6AK.J8E.S38	3.6AK.J8D.S38
	89 x 3	Precision ball bearing	3.6AM.J90.S38	3.6AM.J8C.S38

POM toothed belt head T = 8, Z = 25



Series 3600



POM toothed belt head T = 8, Z = 25			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.6AZ.J8E.S38	3.6AZ.J8D.S38
	89 x 3	Precision ball bearing	3.6AX.J90.S38	3.6AX.J8C.S38

Series 3600

Load capacity (in N)

Assumptions: dynamic load, area load

	1 polyamide sprocket **Steel tube** Precision ball bearing Fixed Ø 20 mm (M12 x 20)		2 polyamide sprockets or toothed belt **Steel tube** Precision ball bearing Fixed Ø 20 mm (M12 x 20)	
EL mm	Ø 80 x 3 mm	Ø 89 x 3 mm	Ø 80 x 3 mm	Ø 89 x 3 mm
200	3500	3500	3500	3500
400	3500	3500	3500	3500
600	3500	3500	3150	3150
800	3500	3500	3000	3000
1000	3500	3500	2930	2930
1200	3500	3500	2880	2880
1400	3500	3500	2850	2850
1600	3500	3500	2820	2820

The drive length of a conveyor with toothed belt drive should be designed so that the total load of 12,000 N for simultaneously conveyed items is not exceeded.


X200
FRONT SEAT
BUILD

Heavy-duty Conveyor Roller Series 3950

Features
- Very sturdy roller
- Sprockets made of steel
- Drive element is welded to the tube
- At the non-drive end there are Series 1450 roller housings, or zinc-plated steel plate for freezer versions to –28 °C
- Ball bearing is well protected by an integrated bearing seal

Load capacity
- Up to 5,000 N

Dimensions

Tube
- Zinc-plated steel to DIN 2394 with 80 or 89 mm outer diameter
- Flanges

Spindle
- Bright steel
- Female threaded spindle (M12 x 20), diameter 20 mm
- Other spindle ends available on request

Bearing
- Bearing housing (black, non-drive end) and bearing seal (yellow) made of polyamide
- Bearing housing made of zinc-plated steel plate
- Types of bearing:
  – Precision ball bearings 6205 2Z, 6204 2RS for roller housings made of zinc-plated steel plate

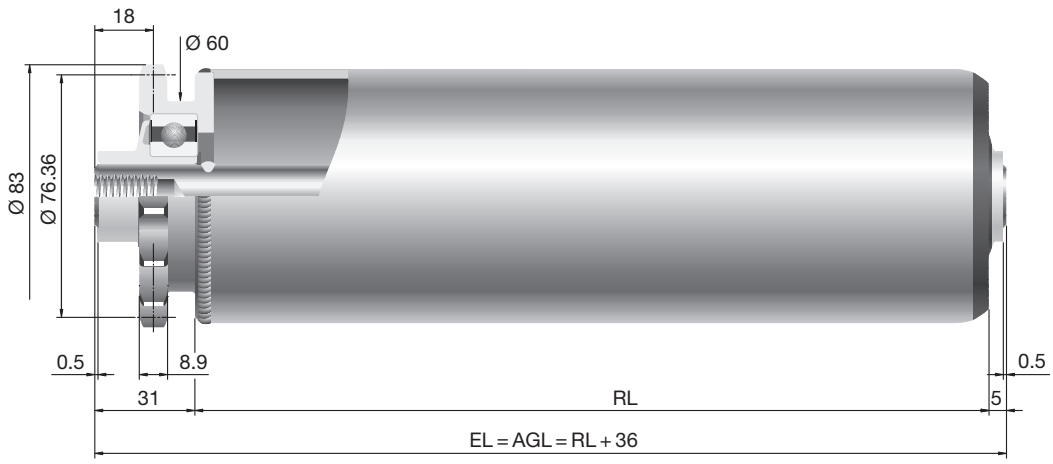
Chain drive element
- Single or double sprocket head made of steel (welded to the tube)
- Dimensions: 5/8" x 3/8"
- Number of teeth: 15 or 18
- Other drive elements available on request

Options, see page 141
- Zinc-plated steel tube, Ø 80 x 2 mm

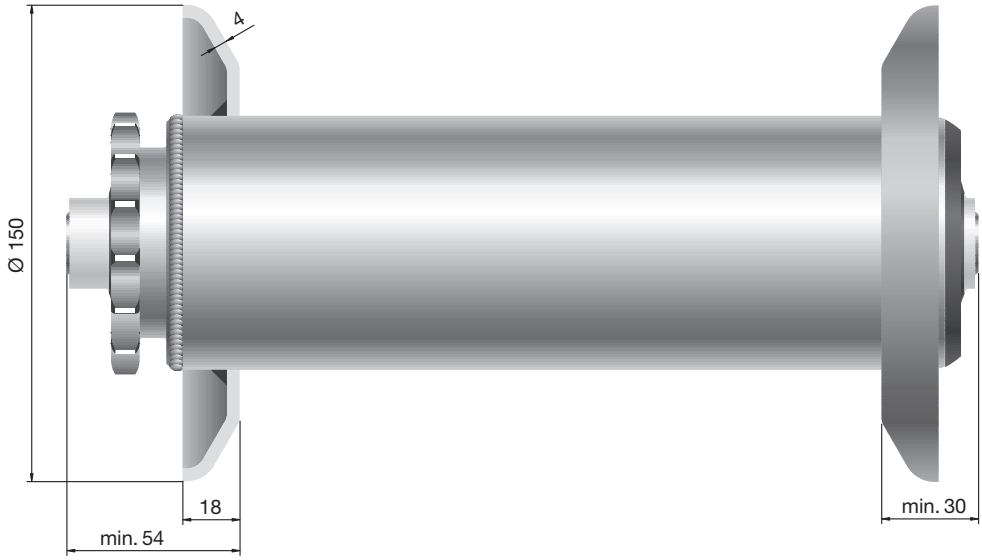
Design information
- See chapter “Types of Drive” page 11

■ = STANDARD

1 steel sprocket 5/8", Z = 15

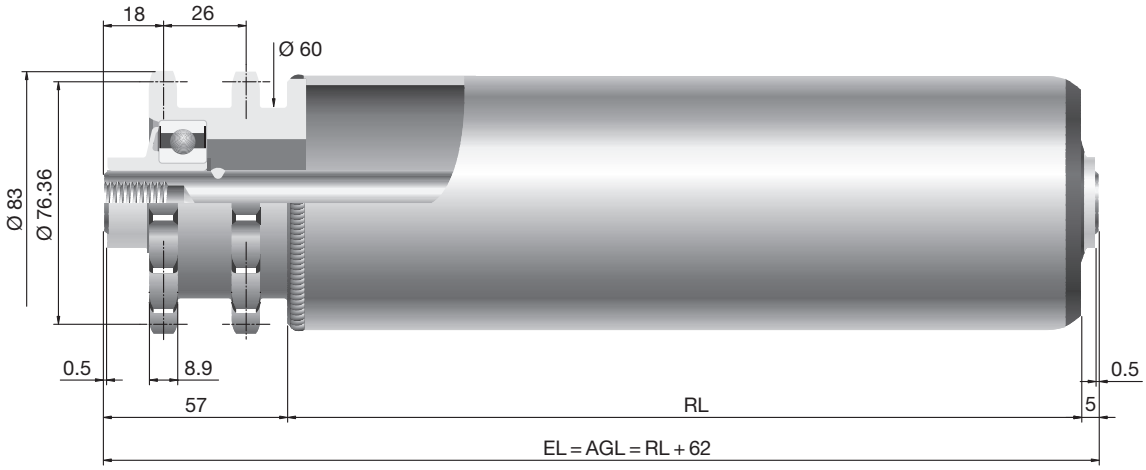


Series 3950

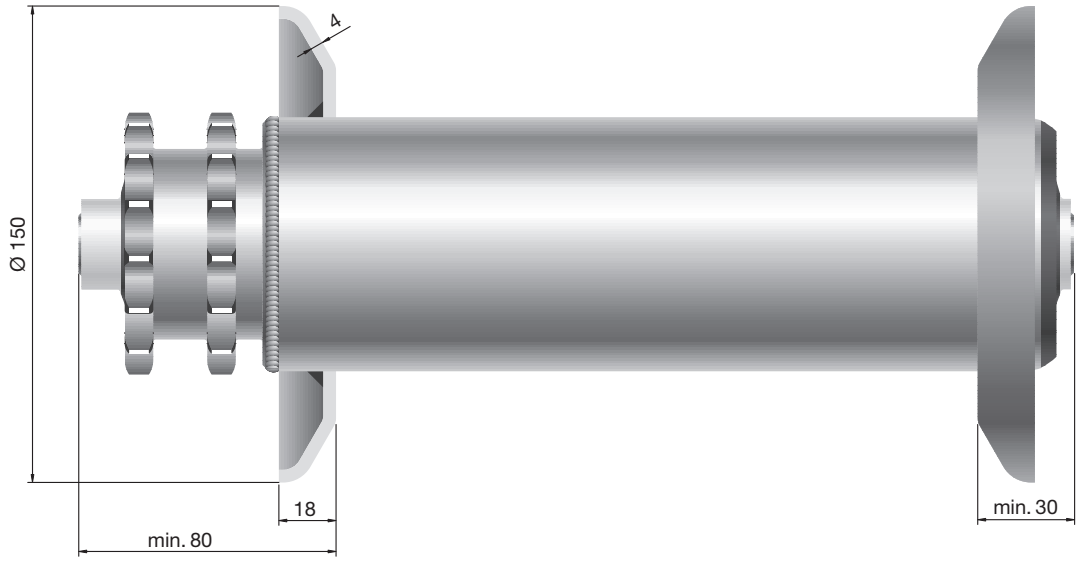


1 steel sprocket 5/8", Z = 15			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.951.JJP.S9F	3.951.JJ1.S9F
	89 x 3	Precision ball bearing	3.952.JJY.S9F	3.952.JJ2.S9F

2 steel sprockets 5/8", Z = 15

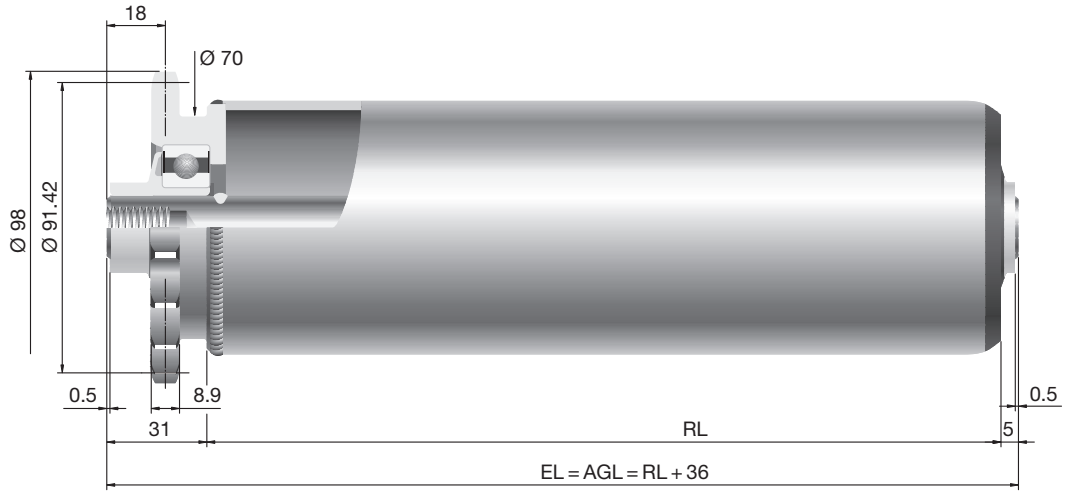


Series 3950

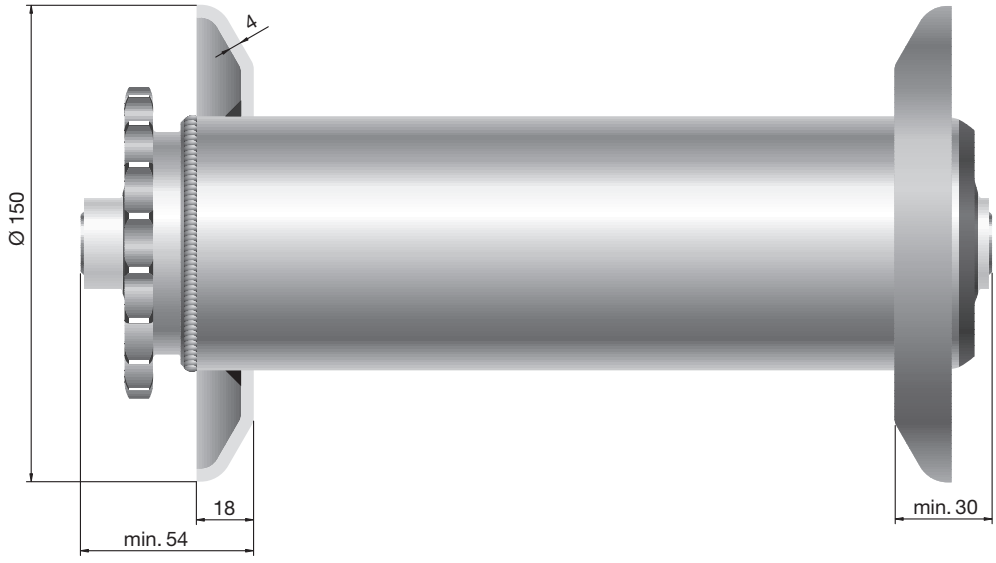


2 steel sprockets 5/8", Z = 15			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.951.JKW.S9E	3.951.JK1.S9E
	89 x 3	Precision ball bearing	3.952.JKY.S9E	3.952.JK2.S9E

1 steel sprocket 5/8", Z = 18

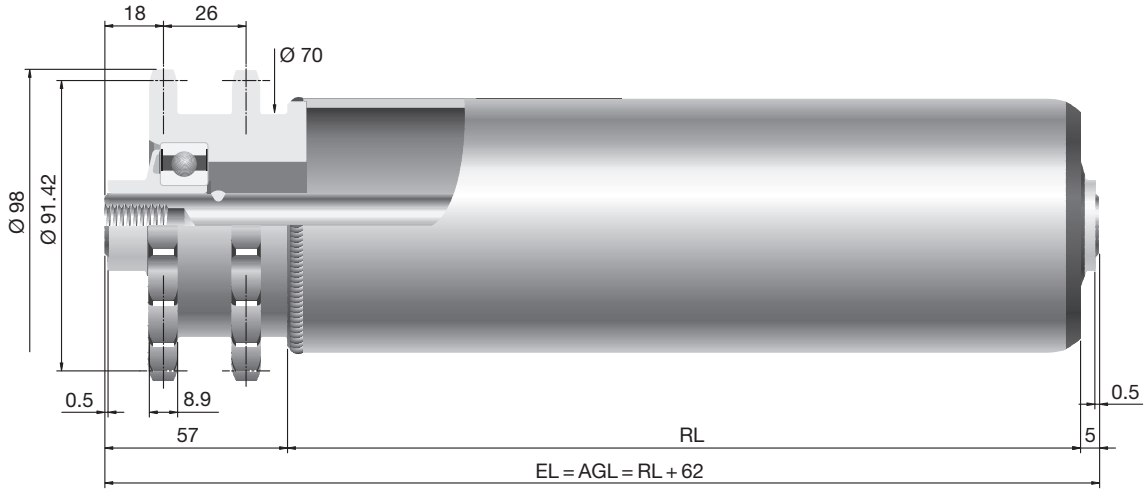


Series 3950

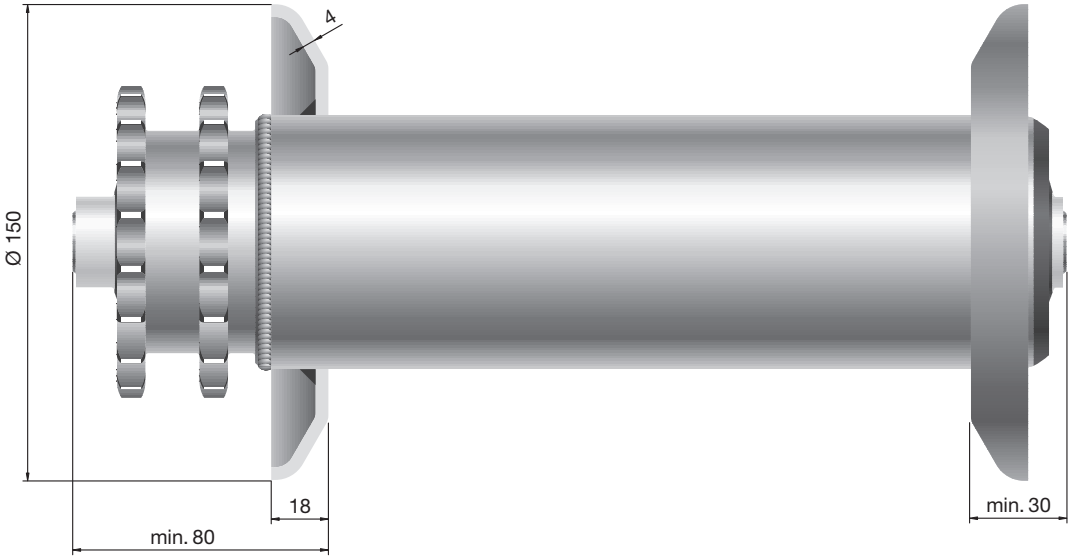


1 steel sprocket 5/8", Z = 18			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.951.JJC.S9F	3.951.JJD.S9F
	89 x 3	Precision ball bearing	3.952.JJE.S9F	3.952.JJF.S9F

2 steel sprockets 5/8", Z = 18



Series 3950



2 steel sprockets 5/8", Z = 18			Female threaded spindle	
Tube	Tube size Ø mm	Type of bearing	Ø 20 mm (M12 x 20) without flange	Ø 20 mm (M12 x 20) with flange
Zinc-plated steel	80 x 3	Precision ball bearing	3.951.JKC.S9E	3.951.JKD.S9E
	89 x 3	Precision ball bearing	3.952.JKE.S9E	3.952.JKF.S9E

Series 3950

Assumptions: dynamic load, area load

Load capacity (in N)

	1 or 2 steel sprockets **Steel tube** Precision ball bearing Fixed Ø 20 mm (M12 x 20)	
EL mm	Ø 80 x 3 mm	Ø 89 x 3 mm
200	5000	5000
400	5000	5000
600	5000	5000
800	5000	5000
1000	5000	5000
1200	5000	5000
1400	4740	5000
1600	3600	5000

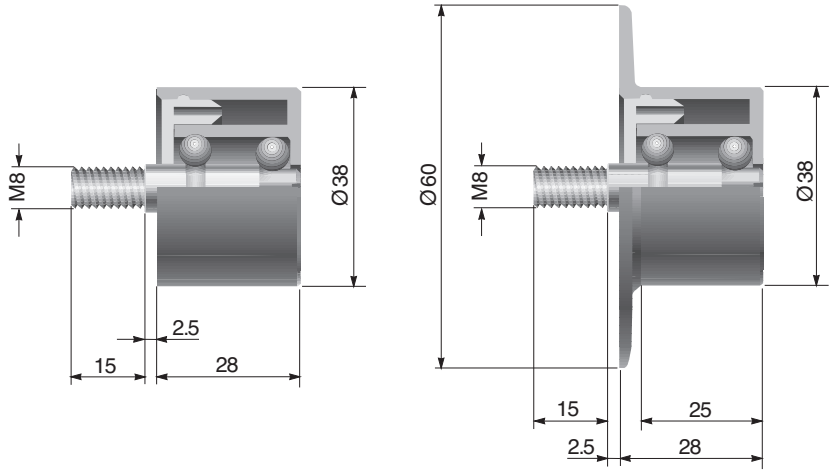


ACCESSORIES

	Description	Series	Page	Additional options	Page
Accessories	Polypropylene conveyor wheels	2370	128		
	Belt wheels	2600	130		
	Wheel track	FLOWAY	132		
	Wheel track	BU 40	133		
	Roller tracks	BU 50	134		
	OMNIMAT	2800	136		
	Ball transfer unit	5500	137		
	Steel ball transfer unit	5000	140		
	Options		141		



Max. load capacity dynamic	Conveyor speed	Standard Ø	Flanges	PVC sleeve	Grooves
100 N		38 mm			
2,500 N		32, 50 mm			
120 N		25 mm			
200 N		48 mm			
1,600 N		50 mm			
50 N		48 mm			
500 N					
20,000 N					



Polypropylene Conveyor Wheels Series 2370

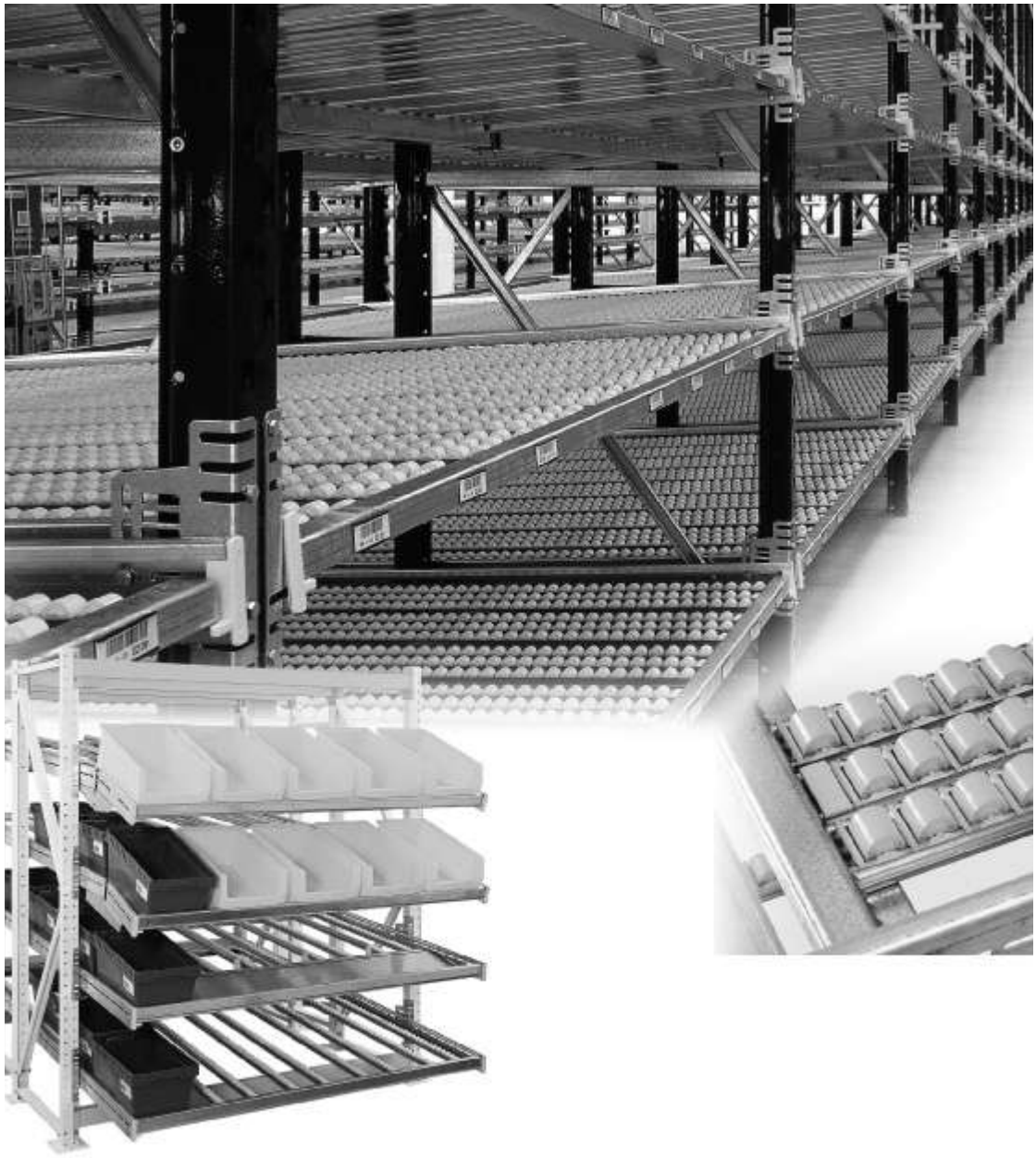
Features

- Suspended on the profile
- Available with 60 mm Ø flange
- Low-noise running
- Made of impact-resistant polypropylene
- Colour: standard version black, stainless steel version grey (RAL 7030)
- Excellent running properties due to double ball race
- Bearing: steel or stainless steel balls on zinc-plated steel pin
- Simple assembly
- Load capacity: 50 N static, 100 N dynamic

Dimensions

- Wheel diameter 38 mm
- Flange diameter 60 mm
- Wheel width 28 mm
- Zinc-plated journal, M8 x 15 mm
- Slot (2 mm) for screwdriver
- Weight: 45 g or 49 g for flanged version

Standard parts number
2371 – Standard bearings
2373 – Stainless steel balls
2370 – Flanged version / standard bearings
2372 – Flanged version / stainless steel bearings



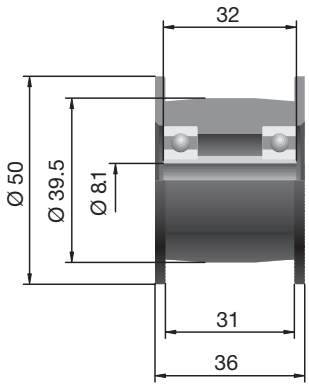
Belt Wheels Series 2600

Features
- Belt pressure rollers for flat belts
- Precision ball bearings with spacing tube
- Spacing tube for fixed screw connections
- Tapered running surface for belt guidance
- Suspended on the profile
- Optionally with stainless steel precision ball bearings
- Belt widths 20 – 30 mm
- With 50 mm Ø flange

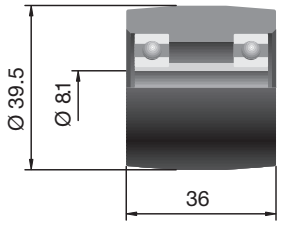
Dimensions
- Effective diameter 39.5 mm, 22.15 mm for article 2610
- Flange diameter 50 mm, 32 mm for article 2610
- Wheel width 36 mm

Belt wheels K 212 for round belts
- Slide bearing
- Drive spindle Ø 25 mm
- Polyamide

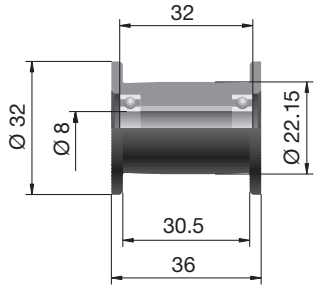
Dimensions
- Effective diameter 30.4 mm
- Outer diameter 50 mm
- Wheel width 31.5 mm



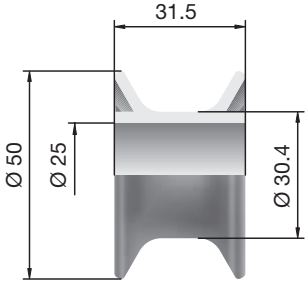
Parts no.	Function	Ball bearing	Material	Colour	Load capacity N	V max. m/s
2601	Pressure roller	6000 2Z	PA6.6	black	2,500	2.5
2606	Pressure roller	6000 2Z stainless	PA6.6	white	2,500	2.5



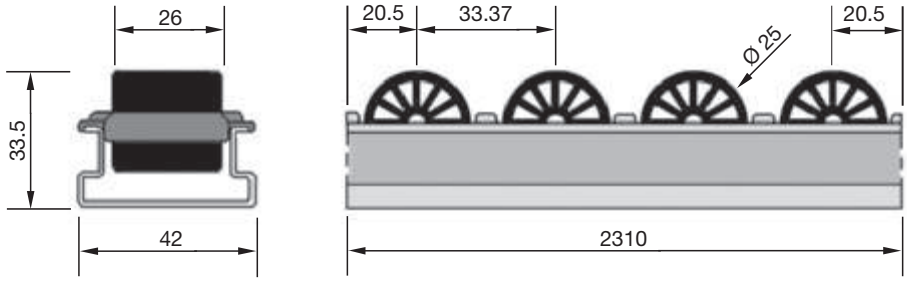
Parts no.	Function	Ball bearing	Material	Colour	Load capacity N	V max. m/s
2611	Pressure roller	6000 2Z	PA6.6	black	2,500	2.5



Parts no.	Function	Ball bearing	Material	Colour	Load capacity N	V max. m/s
2610	Pressure roller	W688 2Z stainless	POM	grey	2,000	2.5



Parts no.	Function	Slide bearing	Material	Colour	Load capacity N	V max. m/s
K 212	Belt wheel	Slide bearing	PA6	grey	1,000	1.2

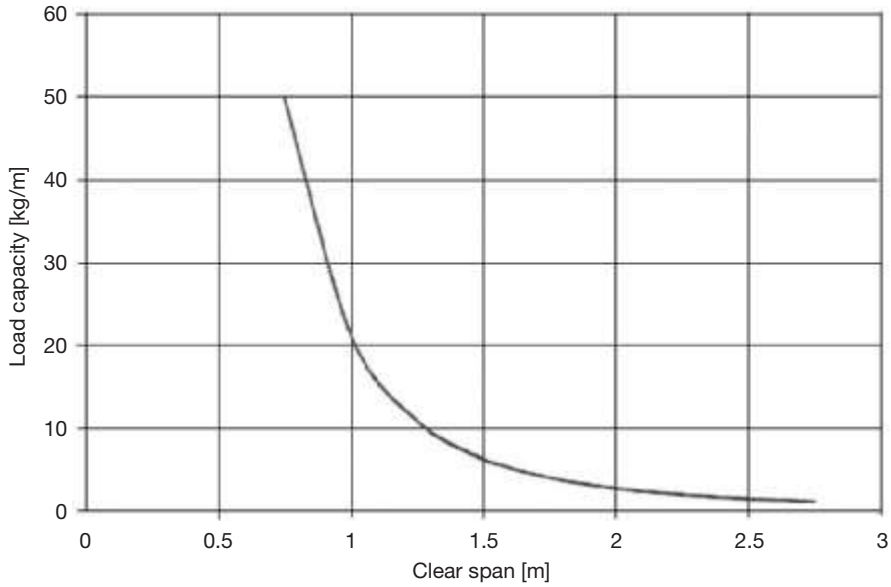


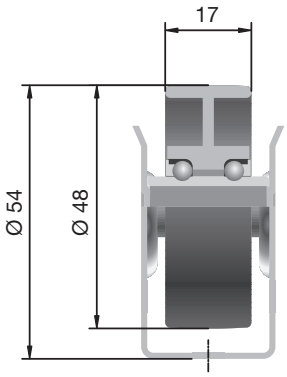
FLOWAY Wheel Track

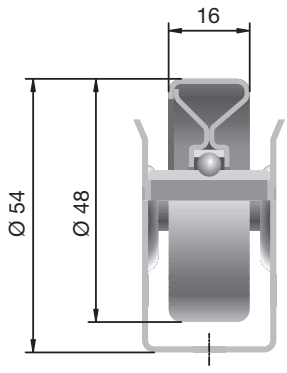
Features

- Wheel track for order picking shelves
- Roller carpet for gravity-slide type operation
- Two Profiles fitted in each other and pressed together to give one complete frame construction.
- Frame construction prevents the opening of the walls under high loads
- Temperature range: –35 °C/+40 °C
- Load capacity: static 120 N; dynamic 80 N
- Load capacity of profiles, see diagram
- Colour of rollers: black
- Length: 2310 mm
- Pitch: 33.37 mm
- Wheel diameter: 25 mm
- Zinc-plated steel plate

Parts number
BUFW



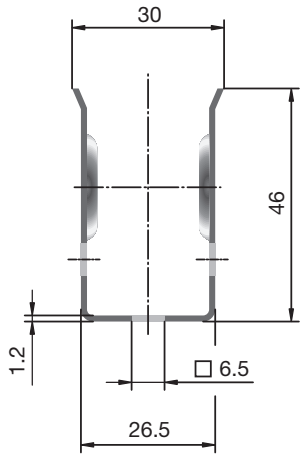


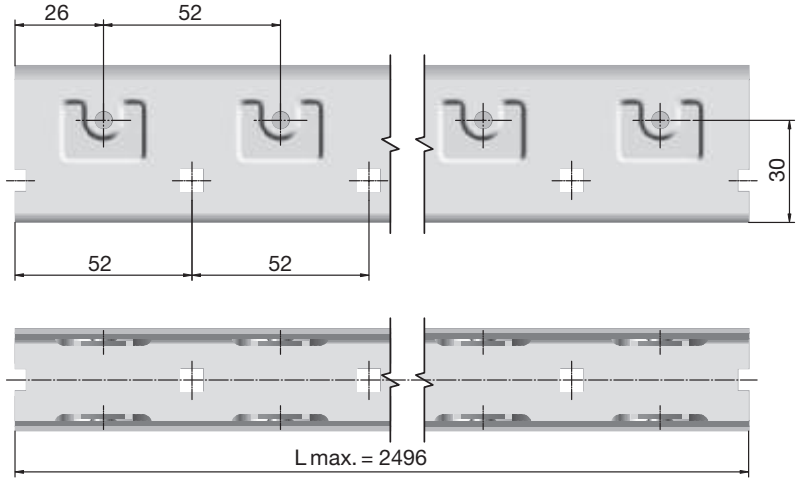


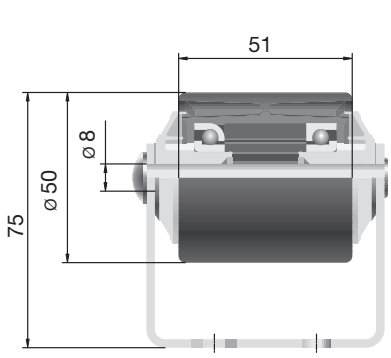
Wheel track Series BU 40

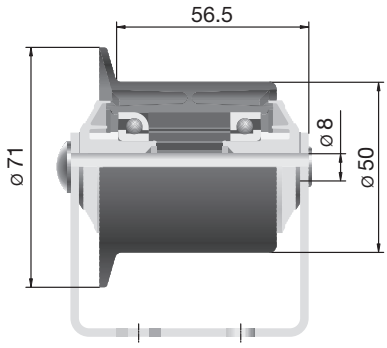
Features

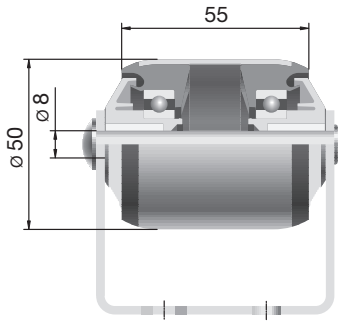
- Universal wheel track
- Zinc-plated steel profile, wall thickness 1.2 mm
- Equipped with Series 2130 plastic wheels or Series 2200 steel wheels
- Standard pitch 52 mm
- Snap-in function for wheels in profile
- Load capacity for both wheel types: 100 N static, 200 N dynamic
- Load capacity of tracks, see diagram











Roller track BU 50

Features

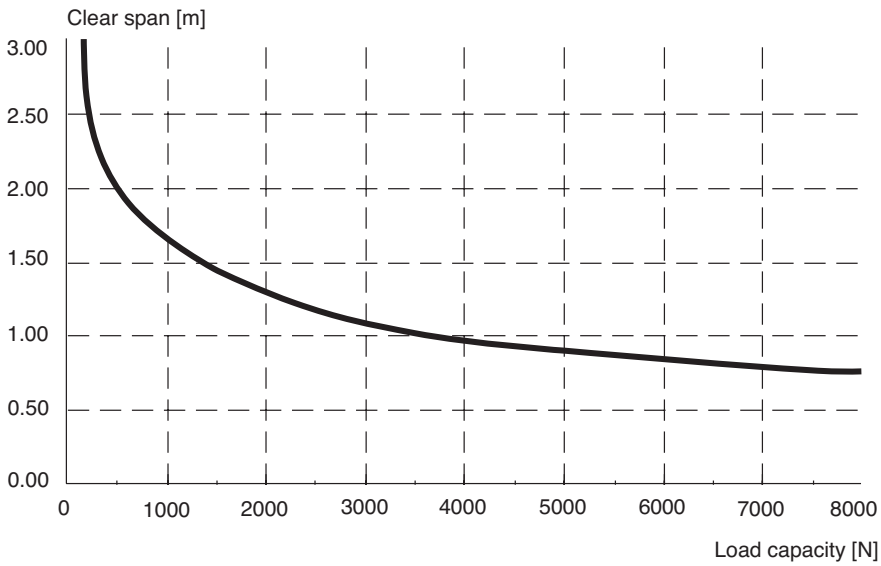
- Universal element can be used for many applications. Conveyor sections are easy to construct and modify
- Suitable for slide type roller tracks, discharge units, chain-linking of machines, etc.
- Various roller pitches possible
- Suitable for transverse movement of pallets due to small minimum roller pitch (52 mm)
- Uses zinc-plated steel profile (wall thickness 2.5 mm)
- Rollers used:
  - Compact conveyor rollers, Ø 50 mm, made of polyamide. With or without flange (load capacity: static 300 N / dynamic 400 N)
  - Conveyor rollers Ø 50 mm with steel tube or solid steel version (load capacity: static 1,200 N / dynamic 1,600 N)
- 8 mm zinc-plated rivet pin as spindle
- Load capacity of U-profiles, see load diagram

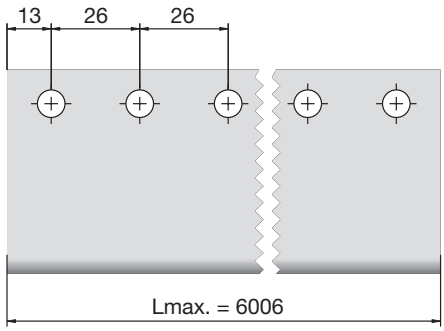
Dimensions

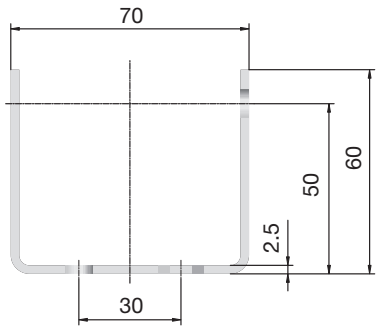
- Wheel diameter 50 mm
- Profile width 70 mm
- Standard perforation in grid 26 mm
- Variable profile lengths in grid size 26 mm (maximally 6,006 mm)

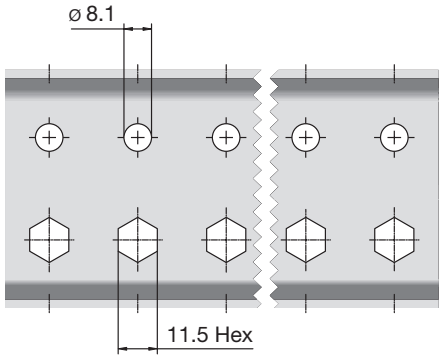
Standard parts number
2901 – Plastic body without flange
2911 – Plastic body with flange
2955 – Steel tube, 50 x 1.5 mm, zinc-plated, without flange

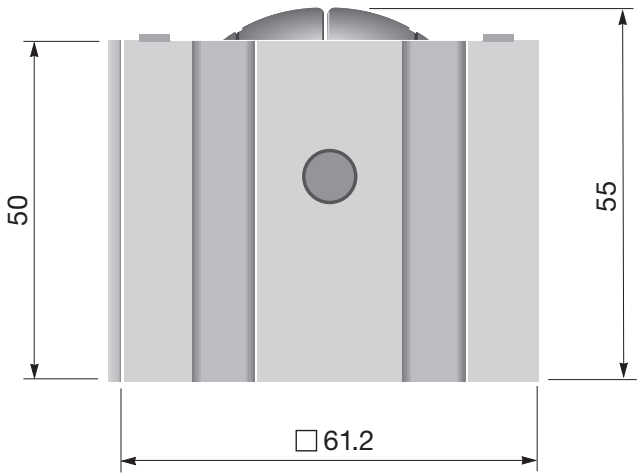
Load diagram (area load deflection 2 mm)









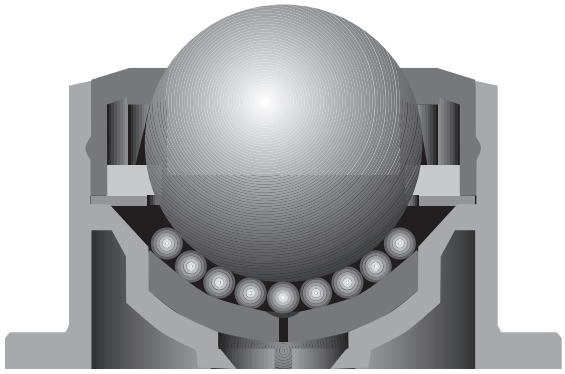


Omnimat Module Series 2800

Features

- Ideal components for constructing switching or assembly tables
- Lateral dovetailing profiles ensure a fixed, form-fitted connection
- Equipped with a pair of omniwheels Series 2570, Ø 48 mm and stainless steel spindle, Ø 8 mm
- Corrosion proof due to use of techno-polymers and stainless steel materials
- Slide bearing
- Conveyance in any direction possible
- Base of conveyed items must be flat and sturdy
- Load capacity: 50 N / module

Standard parts number
2800



Ball Transfer Units Series 5500

Features

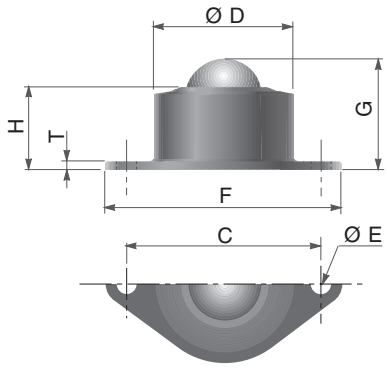
- Conveyance in any direction possible
- Simply designed crossings and switches
- Smooth-running balls
- Housing made of polyamide
- Ball cup for support balls made of hardened steel
- In operation, the support balls circulate under the main ball so that the items being conveyed are provided with constant support
- Protection against dust and splashes of water due to felt seal (in steel balls)
- Base of the conveyed items must be flat and sturdy
- Load capacity: up to 500 N per roller

Design information

The load capacity of the ball transfers is utilised to the full if the balls have exactly the same level.
If operating conditions are not ideal, a corresponding number of extra ball transfers must be used so that there is always adequate contact between the items being conveyed and the load bearing ball transfers.

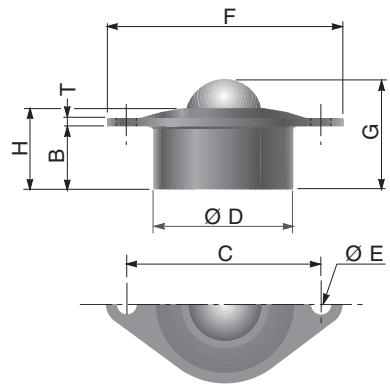
Series 5500

Series 5500 with bottom flange



Parts no.	Material Main ball	Ball Ø mm	Ø D mm	G mm	H mm	B mm	T mm	F mm	C mm	Ø E mm	Net weight g	Load capacity N (stat./dyn.)
5500	Steel	25.4	44 -0.2	35	26	-	3	74/52	60	7	109	500
5505	Stainless	25.4	44 -0.2	35	26	-	3	74/52	60	7	109	500
5520	Plastic	25.4	44 -0.2	35	26	-	3	74/52	60	7	51	200

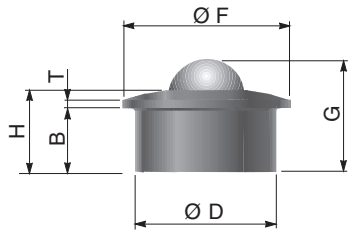
Series 5500 with top flange



Parts no.	Material Main ball	Ball Ø mm	Ø D mm	G mm	H mm	B mm	T mm	F mm	C mm	Ø E mm	Net weight g	Load capacity N (stat./dyn.)
5501	Steel	25.4	44 -0.2	35	26	19.5	3	74/52	60	7	109	500
5506	Stainless	25.4	44 -0.2	35	26	19.5	3	74/52	60	7	109	500
5521	Plastic	25.4	44 -0.2	35	26	19.5	3	74/52	60	7	51	200

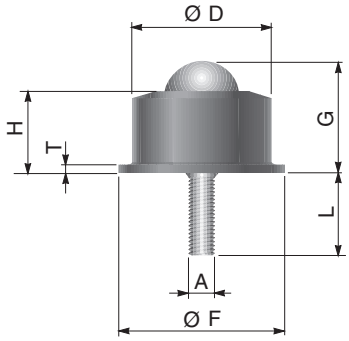
Series 5500

Series 5500 with top flange



Parts no.	Material Main ball	Ball Ø mm	Ø D mm	G mm	H mm	B mm	T mm	Ø F mm	Net weight g	Load capacity N (stat./dyn.)
5503	Steel	25.4	44 -0.2	35	26	19.5	3	52	107	500
5508	Stainless	25.4	44 -0.2	35	26	19.5	3	52	107	500
5522	Plastic	25.4	44 -0.2	35	26	19.5	3	52	41	200

Series 5500 with threaded pin



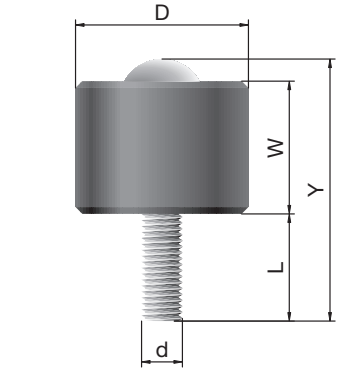
Parts no.	Material Main ball	Ball Ø mm	Ø D mm	G mm	H mm	T mm	Ø F mm	A mm	L mm	Net weight g	Load capacity N (stat./dyn.)
5504	Steel	25.4	44 -0.2	35	26	3	52	M8	22	117	500
5509	Stainless	25.4	44 -0.2	35	26	3	52	M8	22	117	500
5512	Plastic	25.4	44 -0.2	35	26	3	52	M8	22	59	200

Steel Ball Transfer Units Series 5000

The functioning of the Interroll ball transfer units is largely influenced by the precision of the assembly and the calculations for spacing or load. The height, in particular, is to be set with the utmost accuracy.

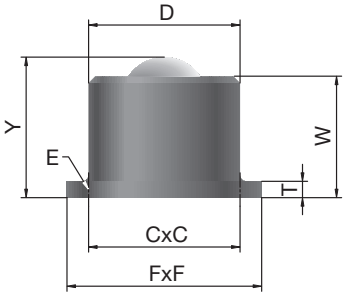
The main ball is available from Ø 12.7 mm – 50.8 mm (1/2" – 2") with a load capacity of 350 N – 20,000 N. These can be delivered as top or bottom flanged versions or with threaded pins.

The main ball rotates on many smaller circulating balls, which likewise spin on a hardened, mushroom-shaped steel table.



Series 5000 – with threaded pin

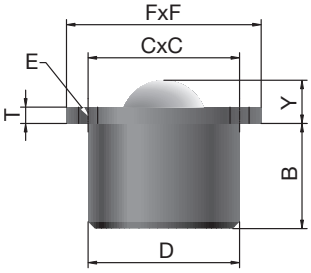
Order no.	Ball Ø mm	Y mm	W mm	D mm	L mm	d mm	Load capacity N	Net weight g
5014	12.7	35	15.1	20.6	15.9	M8	360	43
5015	25.4	74	43	44.5	25.4	M12	1,820	480
5016	25.4	77	45.2	50.8	25.4	M12	3,200	598
5017	38.1	114.1	60.3	60.3	41.1	M20	10,000	1,198
5018	50.8	160	93.3	101.6	50.8	M24	20,000	5,500



Series 5000 – with bottom flange

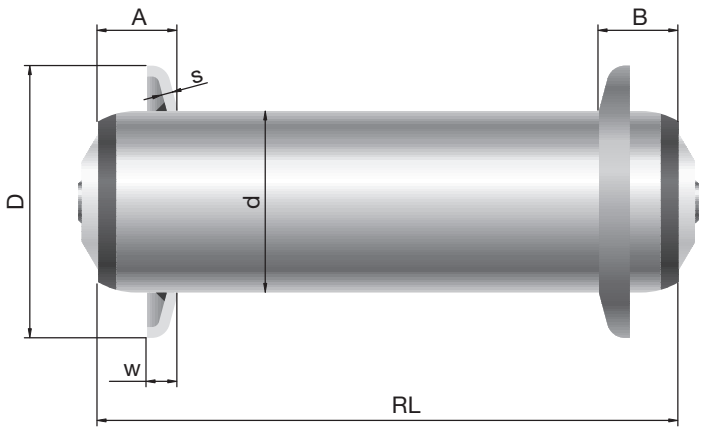
Order no.	Ball Ø mm	Y mm	W mm	D mm	FXF mm	CXC mm	T mm	E mm	Load capacity N	Net weight g
5019	12.7	22.6	18.6	23.8	44.5 dia.	34.9 pcd	3.2	2x 3.6	360	78
5020	25.4	41.3	35.7	44.5	57.2 sq	44.5 sq	4.8	4x 5.6	1,820	480
5021	25.4	44.5	38.1	50.8	76.2 sq	57.9 sq	6.4	4x 7.1	3,200	797
5022	38.1	61.5	48.8	60.3	76.2 sq	57.9 sq	12.7	4x 7.1	10,000	1,284
5023	50.8	98.4	82.5	*	127 sq	101.6 sq	12.7	4x 11	20,000	5,556

* Cast piece 111.1 mm/104.8 mm, tapered



Series 5000 – with top flange

Order no.	Ball Ø mm	Y mm	B mm	D mm	FXF mm	CXC mm	T mm	EO mm	Load capacity N	Net weight g
5024	12.7	11.2	11.4	23.8	44.5 dia	34.9 pcd	3.2	2x 3.6	360	78
5025	25.4	10.3	31	44.5	57.2 sq	44.5 sq	4.8	4x 5.6	1,820	432
5026	25.4	12.7	31.8	50.8	76.2 sq	57.9 sq	6.4	4x 7.1	3,200	802
5027	38.1	25.4	34.9	60.3	76.2 sq	57.9 sq	12.7	4x 7.1	10,000	1,284
5028	50.8	33.3	65.1	110	127 sq	101.6 sq	19.1	4x 10.2	20,000	5,844



Options

The versions shown in the individual product series can be supplemented by further options and optimised as the application requires. Since the options are in many cases independent of the various series and product lines, these are summarised here.

Flanges

All flanges are welded to the tube around the complete circumference. This stable side guide prevents the conveyed items from lateral wandering. For the roller pitch, it should be noted that at least 2 rollers with flanges must always have contact with the conveyed items.

Dimensions of flange and minimum distances

d mm	D mm	s mm	w mm	A min. mm	B min. mm
50	75	3	8.5	22	22
60	100	3	8.5	22	22

Both distances A and D must be specified when placing orders.

Tubes

Various surface treatment options as well as sleeves are available for the tubes of the conveyor wheels.

Hardness of tube surface

The surface of the tubes is hardened without scaling through nitrocarburisation. A more abrasion-resistant surface is achieved. These tubes cannot be zinc-plated. The tube ends are flanged up to 1.5 mm; for greater wall thicknesses, roller housings with an upright seat in the tube are used.

Sleeve

In addition to the standard PVC sleeve Ø 50 x 2 mm with 58° shoring, the following sleeve options are also available:

- PVC Ø 50 x 5 mm, 58° shoring, colour RAL 7037, grey
- PVC Ø 40 x 5.5 mm, 58° shoring, colour RAL 7037, grey
- PU Ø 50 x 2 mm 75° shoring, colour black
- PVC Ø 80 x 2 mm, 58° shoring, colour RAL 7037, grey

Options

Rubberised version
As an alternative to the sleeve, tubes can also be rubberised. This involves a heat-bonding procedure. The rubber has a 75° shore hardness. The rubber coating is sanded so that very precise tolerances for the outer diameter can be met.
The rubber is black and temperature-resistant to 100 °C.

Spindle extension
For Series 1100, 1200 and 1700, the following spindle versions with extended spindle protrusion are available:

- Female threaded spindle
- Male threaded spindle
- Spring-loaded spindle
- Spindle with milled flats

With an extended spindle, the axial support around the seal may not be guaranteed. If greater axial forces occur, as in lateral displacement for example, suitable compensating structures such as spacing tubes may need to be installed.

Spindle adapter
Low-noise running is frequently demanded of the rollers of Series 1100 and 1700. For this, we offer conductive plastic spindle adapters made of POM, which are mounted on a rigid spindle. The adapters have a collar through which the ratio of RL to EL is increased.

The spindle adapters are not an alternative to the tapered spindle shuttle of Series 1700 (page 62). They are particularly suitable for profile constructions with open elongated holes. The non-fixed rollers are placed in the profile from above.

Spindle Ø mm	Outer dimensions of adapter mm	RL/EL mm
8	11 hex., 11 long	+5
10	Spanner width 12 x 8	+4

Options

Tapered rollers for inner radius Ri = 650 mm

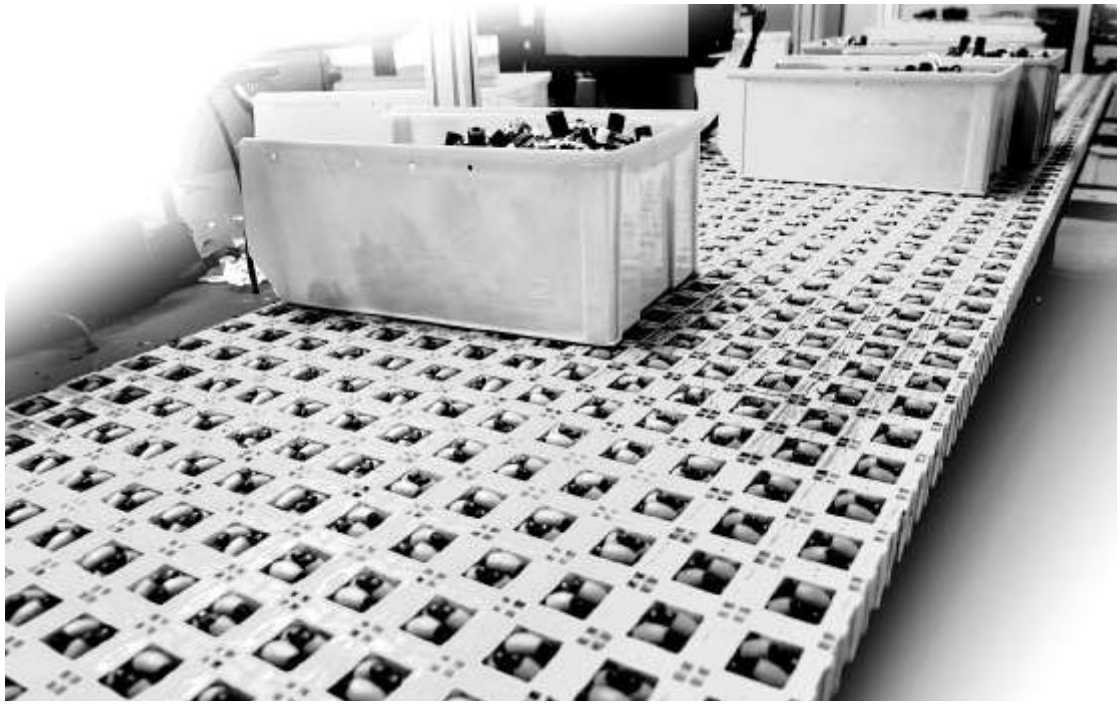
To meet the demand for increasingly compact construction of conveyor systems, Series 1100 and 1700 can be equipped with tapered elements for an inner radius of Ri = 650 mm.
The tapering amounts to 2.2°. The elements are grey RAL 7030 and are offered in increments of 50 mm for RL min. = 265 mm to RL = 415, while RL 415 mm to RL max. = 815 mm sizes are offered in increments of 100 mm.
A cover for closing the respectively largest tapered element is not available.

Rubber tyres for conveyor wheels with Ø 48 mm, Series 2130, 2160 and 2200

For conveyor wheels with Ø 48 mm, a rubber tyre with Ø 52 x 20 mm can be ordered for fragile conveyed items. The rubber tyre can only be supplied unassembled.

Parts number
H190





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