

WE MAKE THE WORLD MOVE







I D L E R S AND PULLEYS



Displacement of nature Picchio [Dieter Specht]

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, fine tuning 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-the art products provide a company with those distinctive contours, that unique cultural identity that no balance sheet. no income statement can capture.

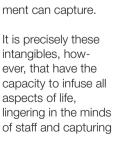
It is precisely these intangibles, however, that have the capacity to infuse all aspects of life, lingering in the minds the imagination of the public. Art has a positive influence on the work environment and the internal processes governing these structures. Each moment of interaction, even if

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 po-

tential, 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.





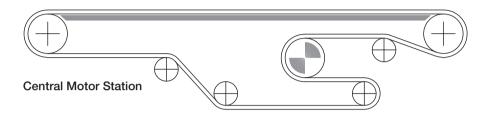


Sculture





Headdriven



Standard Idlers and **Pulleys**

This product brochure presents a stateof-the-art range of standardised idlers and pulleys for belt conveyors. The solutions outlined in this document represent an extension to our portfolio of drum motors. They are also to be seen as independent products for belt conveyors in general. Interroll has developed the modular platform 7000 for both variants. It forms the basis for idlers and pulleys. Both products are designed for a diverse range of applications within the field of unit-load handling, an area in which the well-known 1700 and 1100 roller series have established a proven track record spanning many decades.

The product portfolio for belt conveyors is supplemented by the series 1450 standard roller, which is designed here for use as a snub or feed pulley. The 1700 roller series can be employed either for support of the empty belt in the bottom section, or for rolling load removal.. Interroll offers an all-embracing package comprising the full range of idlers and pulleys used in connection with belt conveyors for unitload handling of items with an individual weight of up to 50 kg and at conveyor speeds of up to 2 m/s.

As standard, the idlers and pulleys are supplied with bearing housings, with which they can be conveniently and easily attached to the section profile or to any tensioning devices. In this case, Interroll recommends selecting a conveyor belt with an excess width of approx. 35 mm so that the feed point for the idler/bearing housing is always covered.

When ordering idlers and pulleys without bearing housings, the user must define the width of the conveyor belt based on his own design and cover requirements.





Idlers

The basis of the idlers is formed by an extruded aluminium profile developed specifically for use in belt conveyors. This profile is ribbed so as to achieve maximum bracing against bending with optimum use of materials. The outer diameter of the idler is cylindrical in shape over half the length at the centre. The geometry of the idler is conical on both sides over 1/3 of the idler length (K = 0.7 mm).

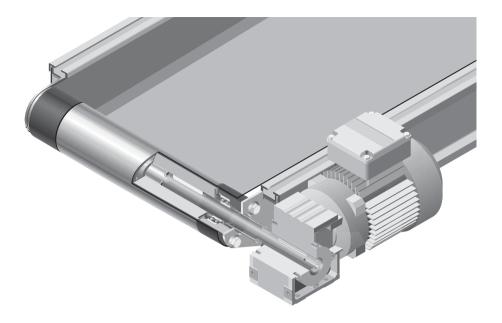
The steel bearing journals, i.e. the shaft ends, are installed in the aluminium profiles using fitted keys in a forced fit to prevent rotation. Proper axial seating is achieved by means of a bracing spring, ensuring that the journals cannot dislodge even when exposed to high speeds and bending stresses.

The idlers are machined to their final dimensions with the journals installed, and this with optimum tolerances and extremely tight runout accuracies.

The idlers and pulleys are equipped with external support. Self-aligning ball bearings are installed in the bearing housings as fixed-point bearings, or only on one side as floating-point bearings. The bearing housings themselves are equipped with simple threaded holes for simple attachment to the profile or in tensioning devices.

The journals can also be sized according to customer requirements (see Page 14 and 18). In this case, the scope of supply is limited to the idlers, without the bearing components.





Pulleys

The pulley is identical down to the last detail to the idler described above. As required by customer specifications, a drive journal is merely manufactured on one side to allow existing bull wheels or geared motors to be mounted.

All pulleys can also be supplied with lagging.

A basic alternative to pulleys with mounted gearing is the Interroll drum motor, which combines space-saving design with competitive pricing.

Please contact your Interroll sales consultant or one of the Interroll central offices listed on the back page for a separate catalogue featuring drum motors.









Aluminium profile

Our extruded aluminium profiles made of AlMnSi are manufactured to high-precision standards due to the special production processes applied.

The profile design offers optimum resistance against bending, while at the same time having the lowest possible mass.

The idlers that are installed complete with journals are machined in a clamp, allowing very tight tolerances to be achieved. The runout accuracy ranges between 0.07 and 0.15 mm, depending on the roller length, thus eliminating the need for fine-balancing of the drums for the given areas of use.

In addition to its resistance against corrosion, the low weight of aluminium is a major advantage. The rotating mass for aluminium items is considerably less than that for comparable steel units, and this has an extremely beneficial effect on the service life and noise level of the overall system.

The conical geometry K = 0.7 mm, graded in 1/3-1/3-1/3 over the length of the roller, meets the specifications of the belt manufacturer.





Precision selfaligning ball bearings based on DIN

Only precision self-aligning ball bearings based on DIN series 22 are used for the 7000 product platform. Tolerance limits exceeding those cited in the DIN standard are additionally specified by Interroll to provide consistent high-quality operation - among others for bearing clearance, lubrication and sealing. Bending of the axle, even over extended unit lengths, remains uncritical due to the use of these precision self-aligning ball bearings. All of these bearings implement sealing of design 2RS, and lubrication is designed for the entire lifetime of the ball bearings.







journals



sured by a patented steel clamp.

After being pressed into the aluminium profiles, the drums are machined to their final dimensions, allowing extremely tight tolerances and precise runout accuracies to be achieved.

The axle projection of the drive journal is always based on customer specifications, taking into account the individual dimensions of the specific belt section profile, or of the drive components. It is essential that the dimensions be indicated completely as given in the table.

The axle journals are supplied exclusively as bright steel; spray-on oil is applied as temporary corrosion protection for transport.





Bearing housings

The bearing housings have two functions; they accommodate the self-aligning ball bearings, while simultaneously forming the universal interface to the customer profile. Threaded holes (M8 or M10) are drilled into the back of the bearing housings in an arc.

This allows universal attachment of the idlers and pulleys, extremely convenient and with high stability to belt section profiles or tensioning devices.

The bearing housings are precisionturned items. The outside diameter is always smaller than the drum diameter to allow optimum movement of the belt on the housing when conveyor belt overlap is present.

The fit for the ball bearing in the bearing sealing housing is a close sliding fit. The self-aligning ball bearings are fixed by an interference fit on the inside ring of the axle bolt.

The requisite single-side floating point ensures length compensation over the sliding fit in the bearing sealing housing. A retaining ring on the opposite side serves as the fixed point.

The steel housing is burnished to protect against corrosion and therefore always has a black colour. As is commonly known, however, burnishing provides only limited protection against corrosion.









Pulley lagging

To minimise slip between the pulley and the belt, the pulleys can also be ordered with lagging. Pulley lagging is always an optional extra, for which wear has to be considered. To minimize wear, the preset belt tension has to be adjusted to the lowest level required. The type of belt has to be coordinated with the specification of the lagging.

Tolerance and application parameters

Runout accuracy:

Up to RL 500 mm = 0.07 mmRL 500 mm - RL 1000 mm = 0.15 mm

Possible tolerance class for axle and drive journals:

IT7

Dimensional variation:

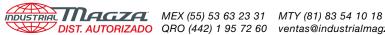
DIN ISO 2768-m

Temperature range:

-5 °C to +60 °C Internal areas with normal temperatures

Speed:

 $V_{max} = 2 \text{ m/s}$





Key facts about belts

The design of the belt idlers and pulleys must also be taken into account when selecting conveyor belts. Loading on the idlers and pulleys is influenced by three parameters:

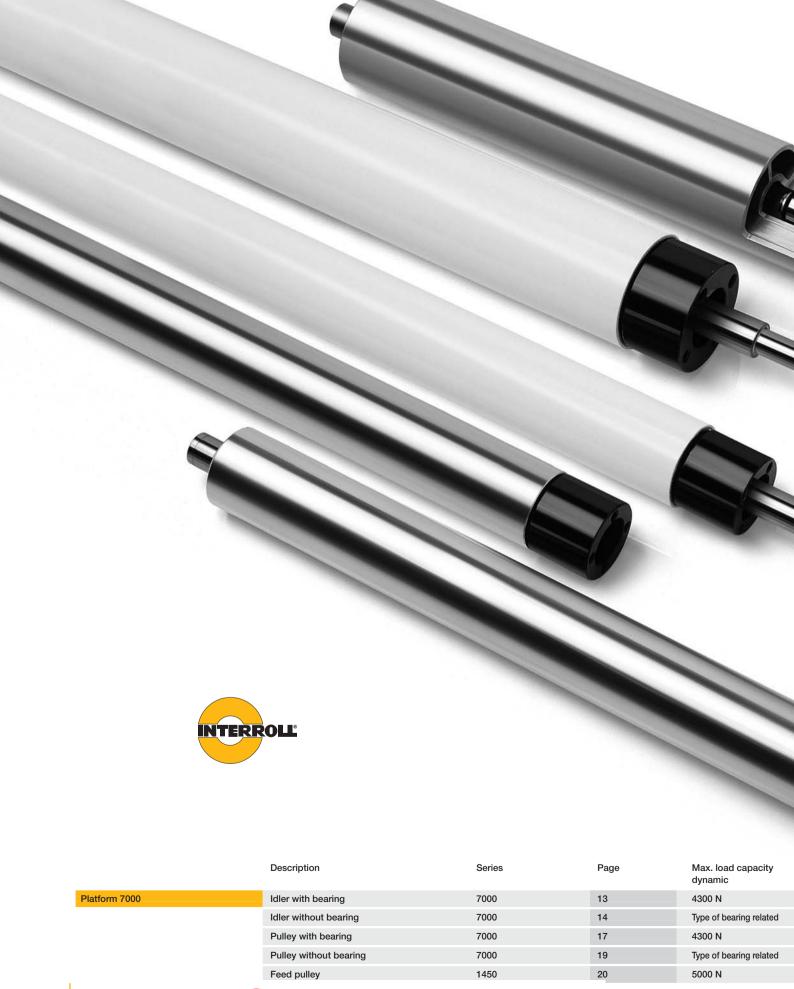
- The load to be conveyed
- The conveying speed
- Belt tension

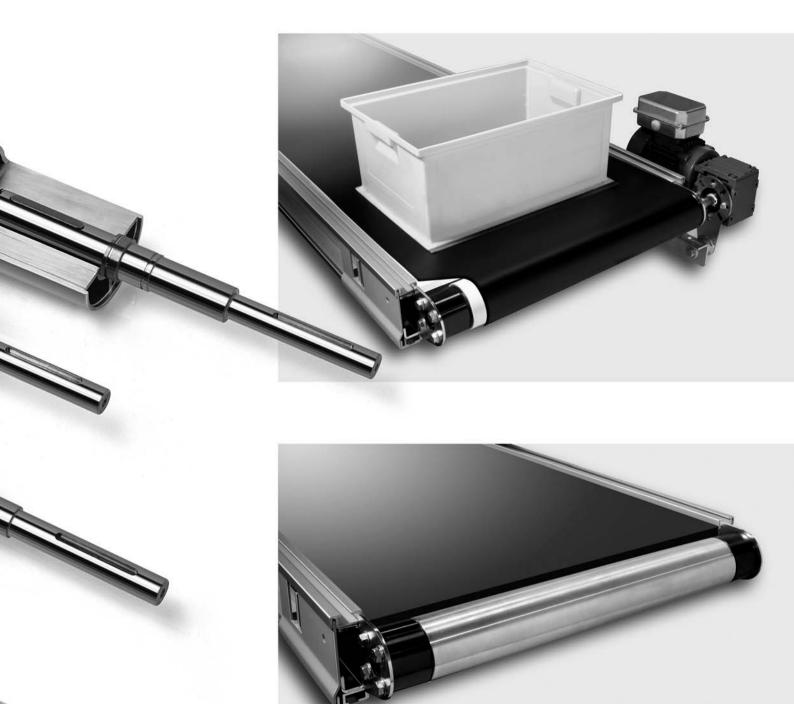
An essential factor here is the tension of the actual belt. The belt tension necessary to provide low slippage and firm belt advance is given by the specific parameter of 1% belt tension. This belt-specific value indicates the force N that is generated at a belt tension of 1% per mm of belt width [N/mm].

Belts with a 1% parameter of 5 to 12 N/mm are supplied for unit-load handling. Interroll recommends running idlers and pulleys with belts that have a 1% parameter of 5 to 8 N/mm. The set belt elongation (stretch) should not exceed a value of 0.3%.









Max. conveyor speed	Standard-Ø	Rubber lagging
2 m/s	62.5 mm, 79.5 mm, 91 mm	
2 m/s	62.5 mm, 79.5 mm, 91 mm	
2 m/s	62.5 mm, 79.5 mm, 91 mm	•
2 m/s	62.5 mm, 79.5 mm, 91 mm	•
2 m/s	60 mm	



Maximum Load-Capacity (in N)

The specific strength and maximum deflection values are taken into account when calculating the maximum loads for idlers and pullevs. The service lifetime of the self-aligning ball bearings has been determined as the limiting factor. The service life LH10 was taken as a constant at 20,000 hours, thus resulting in maximum loading for the idlers/pulleys as a function of speed, conveying speed and roller length (see tables). Load spikes for acceleration and braking were also taken into account for these calculations; other load spikes are to be avoided.

	Nominal	diameter 62.5	5 mm					
U / min m/s RL	150 0.50	200 0.66	250 0.82	300 1.00	350 1.15	400 1.32	450 1.50	
300	4000	3700	3400	3200	3000	2900	2800	
500	3800	3400	3100	2900	2800	2600	2500	
700	3000	2600	2300	2100	2000	1800	1700	
1000	2400	2000	1700	1500	1400	1200	1100	

	Nominal	diameter 79.	5 mm					
U / min	150	200	250	300	350	400	450	
m/s RL	0.63	0.84	1.00	1.26	1.50	1.70	1.90	
300	4300	3900	3650	3450	3250	3100	3000	
500	3950	3550	3300	3100	2900	2750	2650	
700	3500	3100	2850	2600	2450	2300	2200	
1000	3150	2750	2500	2250	2100	1950	1850	

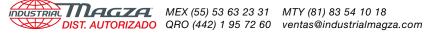
I	Nominal	diameter 91 ı	mm				
U / min m / s RL	150 0.70	1.00	250 1.20	300 1.50	350 1.70	400 1.90	
300	4300	3900	3650	3450	3250	3100	
500	4200	3800	3550	3300	3150	3000	
700	4100	3700	3450	3200	3050	2900	
1000	3950	3550	3300	3050	2900	2750	

The maximum static load, resulting from preset belt tensioning, is as follows for:

 \emptyset 62.5 mm = 6000 N \emptyset 79.5 mm = 8000 N Ø 91 mm = 8000 N

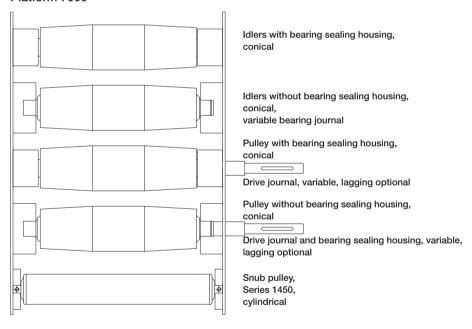
When ordering idlers or pulleys without bearings the max. load has to be calculated by the customer.

- Max. allowed tube deflection 0.7 mm $Ix \varnothing 62.5 \text{ mm} = 503,000 \text{ N/mm}^4$ $Ix \varnothing 79.5 \text{ mm} = 1,070,000 \text{ N/mm}^4$ $Ix Ø 91 mm = 1.500,000 N/mm^4$
- Allowed stress = 17.4 N/mm²
- Lifetime calculation followed by the recommendations of the bearing manufacturer.





Platform 7000



This platform is based on the DIN self-aligning bearings 2205 for a pulley diameter of 62.5 mm and 2206 bearings for diameters of 79.5 and 91 mm. The associated snub pulley from platform 1450 is equipped with a DIN grooved ball bearing 6204 2RS.

All of the ball bearings used are always supplied with dragging seals of 2RS design.

The ball bearings for idlers and pulleys of series 7000 are mounted with a forced fit (k6) on the axle bolts/drive journals in a complex shrink-fitting process. The ball bearings for the snub pulleys are secured against twisting on the axle by an O-ring.







Idlers of Series 7000

Properties

- Suitable as idlers for belt conveyors in the area of unit-load handling
- Standard interface with bearing housings provided with inside thread for attachment to belt section profile or to tensioning stations
- Shrink-fit mounting of bearings on the axle iournal
- Precision-machined items with steel journals and aluminium profile
- Reduced rotating mass, compared to conventional steel units
- Maximum belt speed 2 m/s

Loading

• Up to 4300 N

Tube dimensions

- Nominal diameter = cylindrical section of idlers and pulleys, without lagging
 - 62.5 mm
- 79.5 mm
- 91 mm
- Design without bearing sealing housing includes cover for aluminium profile with dust protector cap

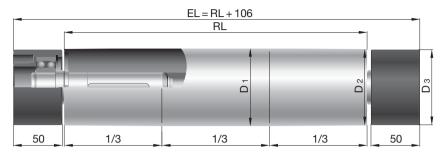
Axle journal

- Steel, bright, diameter 25 mm for diameter 62.5 mm, 30 mm for diameter 79.5 mm and diameter 91 mm
- Shrunk-fit bearings with force fit on the axle journal
- Tailor-made design of the axle journal based on customer specifications when these units are ordered without bearing housings

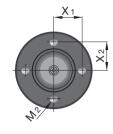
Bearing housings

- Precision machined items made of steel, burnished
- Secured at fixed-point end with retaining ring based on DIN
- DIN self-aligning ball bearings 2205 2RS and 2206 2RS









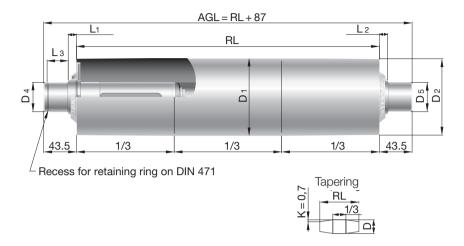
Idlers, Series 7000

Idlers with b	Idlers with bearing									
D1 Nominal diameter mm	D2 = D1-(2x K) mm	D3 Bearing sealing housing diameter mm	X1/X2	M2	Item number					
62.5	61.1	59	23	M8	07160B					
79.5	78.1	75	29	M10	07180B					
91	89.6	86.6	35	M10	07190B					









Idlers, Series 7000

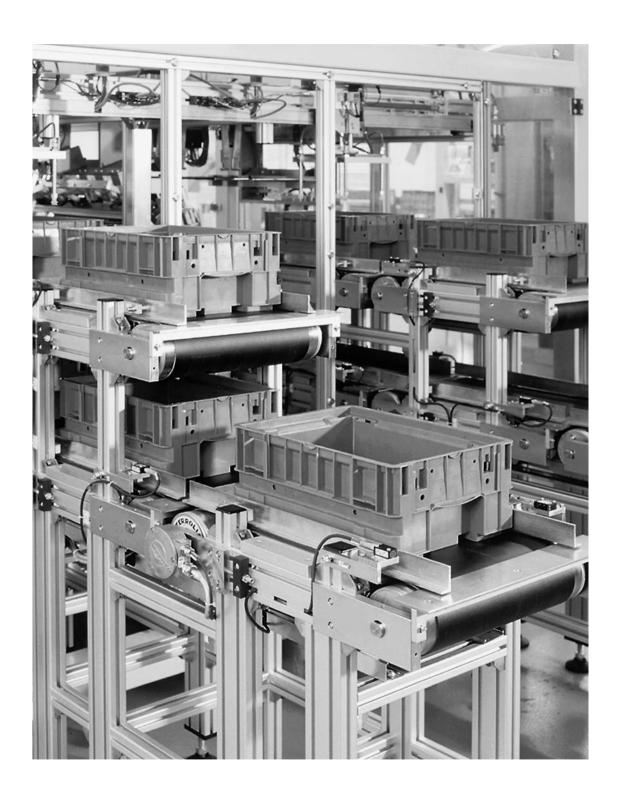
Idlers \	Idlers without bearings									
	Max. Ø 30 mm			Min. 8.5 mm						
D1	D2	D4	D5		L1	L2	L3	Item number		
Nom.	= D1-	Shaft	Shaft	IT	clearance	clearance	clearance			
Ø	(2x K)	Ø	Ø	Class						
mm	mm	mm	mm	mm	mm	mm	mm			
62.5	61.1	'		7	,			07160A		
79.5	78.1			7				07180A		
91	89.6			7				07190A		

When ordering idlers without bearing housings, please indicate the dimensions for the axle journal.

Please indicate the values for shaft diameter values D4 and D5 and L3 clearance dimensions for the locking recess as shown in the above table. Only when this information is provided, together with the item numbers and roller length RL, is an order complete and only then can it be processed.

The single-side locking recess provides axial fixing of the bearing to provide for a fixed-point side.











Drive pulleys of Series 7000

Properties

- Suitable as pulleys for belt conveyors within the area of unit-load handling
- Standard interface with bearing housings provided with inside threads for attachment to belt section profile or to tensioning stations
- Shrink-fit mounted bearing on the axle journal/drive journal
- Precision-machined items with steel journal and aluminium profile
- Mounting dimensions for geared motors, etc. always based on customer specifications
- Reduced rotating mass compared to conventional steel units
- Maximum belt speed 2 m/s

Loading

• Up to 4300 N

Tube dimensions

- Nominal diameter = cylindrical section of idlers and pulleys, without lagging
 - 62.5 mm
 - 79.5 mm
- 91 mm
- Cover for aluminium profile with dust protection cap for design without bearing sealing housing

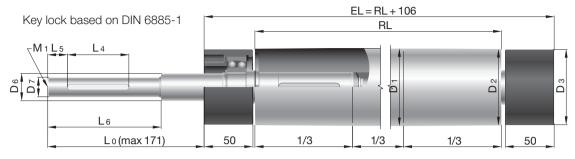
Axle journals

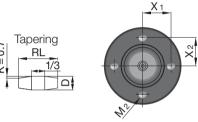
- Steel, bright, diameter 25 mm for diam. 62.5 mm, diam. 30 mm for diam. 79.5 mm and Ø 91 mm
- Shrink-fit mounted bearing with force fit on the axle journal
- Tailor-made design of the axle journal/drive journal based on customer specifications when these units are ordered without bearing housings

Bearing housings

- Precision machined item made of steel, burnished
- Securing of fixed point side with retaining ring DIN
- DIN self-aligning ball bearings 2205 2RS and 2206 2RS







Pulleys of Series 7000

Pulleys w	Pulleys with bearing									
				25 mm	1					
D1	D2	D3	D6	D7	IT Class	X1/X2	Item numbers			
Nom.	= D1-	Housing	Shaft	Shaft						
Ø	(2x K)	Ø	Ø	Ø						
mm	mm	mm	mm	mm		mm				
62.5	61.1	59			7	23	07360B			
79.5	78.1	75			7	29	07380B			
91	89.6	86.6			7	35	07390B			

D1 Nom. Ø mm	L0 Total length mm	L4 mm	L5 mm	L6	M1 Thr	M2 ead mm
62.5	'					M8
79.5						M10
91						M10







Pulleys of Series 7000

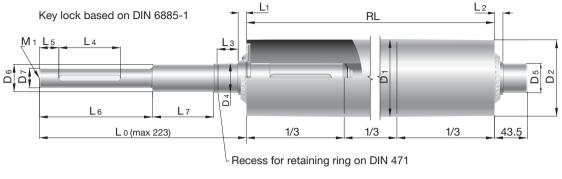
Please indicate all other dimensions for drive journals or extensions when ordering any pulleys.

Please indicate the values for shaft diameter values D4 to D7 and length dimensions L0 to L7 as shown in the above table. Only when this information is provided, together with the item numbers and roller length RL, is an order complete and only then can it be processed.

The single-side locking recess provides axial fixing of the bearing to provide for a fixed-point side.

Pulleys can also be ordered with optional lagging. The friction between the belt and the drive is increased when lagging is installed. This allows higher loads to be transported with the same belt tension, and slip is reduced markedly on acceleration.







Pulleys of Series 7000

Pulley w	Pulley without bearing								
	Max. Ø 30 mm								
D1	D2	D4	D5	D6	D7		Item number		
Nom.	= D1-	Shaft	Shaft	Shaft	Shaft	IT			
Ø	(2x K)	Ø	Ø	Ø	Ø	Class			
mm	mm	mm	mm	mm	mm				
62.5	61.1	·		·		7	07360A		
79.5	78.1					7	07380A		
91	89.6					7	07390A		

		Min. 8.5 n	nm						
	L0	L1	L2	L3	L4	L5	L6	L7	M1
Nom.		Clearance	Clearance	Clearance					
Ø	length								
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
62.5									
79.5									
91									







Snub pulleys of Series 1450

Properties

- Suitable as snub pulleys or feed pulleys at motor stations for belt conveyors
- Edges of roller rounded
- Secure bearing seating
- Quiet running, due to the use of polymer bearing bases and seals
- Sealing lips ahead of ball bearings as protection against dust ingress
- Maximum belt speed 2 m/s

Loading

• Up to 5000 N

Tube dimensions

• Steel, bright, diameter 60 mm x 3 mm, tube surface suitable for belt conveyors

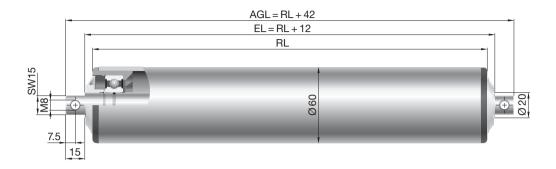
Axle

- Steel, bright, diameter 20 mm
- Ball bearing runs directly on the axle
- O-ring provides for anti-rotation against the inside ring of the ball bearing
- Wrench flat
- M8 transverse threaded hole

Bearing

- Bearing base made of polyamide (black)
- Bearing cover made of polyamide (yellow)
- Precision ball bearing 6204 2RS





Snub pulleys of Series 1450

Wrench flat axis

Diameter	Width across flats	Transverse bore	Roller diam.	RL = EL-
mm	mm	mm	mm	mm
20	15 x 15	M8	60	12

Tube	Tube dimensions mm	Bearing design	Item number
Steel, bright	60 x 3	6204 2RS	1.88J.B6S.S6D
Steel, galvanised	60 x 3	6204 2RS	1.88J.J6S.S6D







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