

TECHNICAL CATALOGUE

ULMA Conveyor Components



60years
1958 - 2018
Commitment to Innovation, Quality and Service



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ULMA Conveyor Components S. coop., founded in 1958, is part of the ULMA Group, which is one of the biggest business groups in northern Spain with over 60 years of experience in the industry and a clear commitment to innovation, employment and added value.

The ULMA Group is made up of 9 cooperatives and operates around nine strategic business strategies. It maintains a constant expansion and growth path.

The philosophy of ULMA is based upon human and social values. More than 5,500 people work in the Group, generating sales totals exceeding 900 million Euros.

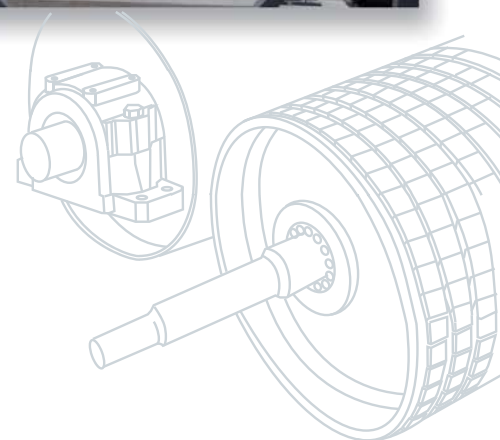
The ULMA Group is also part of the MONDRAGON cooperatives, which from its foundation has collaborated with the association's educational, training, research and social security entities.

ULMA Conveyor Components advances towards the future committed to continuous improvement, permanent innovation and client satisfaction, focusing its business strategy towards generating a richer working environment and job creation. In the new millennium, it positions itself as a modern company which plans to use its human, technical and productive assets to compete in the global market.



The constant search for new development possibilities, process improvements, products and services by means of advanced engineering in close collaboration with our clients, drives the ongoing search to obtain solutions to satisfy the needs of our customers.

Our designs keep up with ever changing market needs, contributing to the creation of value and to the generation of new ideas by means of innovative attitudes and applications in all areas within the company and our social environment. Ideas and creativity are fostered within a culture of continuous improvement, in which our employees and our customers are a constant source of inspiration to ULMA Conveyor Components.



Certificates



II 2GD c
I M2 c



ER-0556/1998
 AENOR, Spanish Association for Standardization and Certification certifies that the organization
ULMA CONVEYOR COMPONENTS, S.COOP.
 has a quality management system according to the UNE-EN ISO 9001:2008 Standard
 for the activities: The design, development and production of:
 Rollers for belt conveyors.
 The design and development of:
 Drums and idlers for belt conveyors.

which is/are carried out in: BO ZELAIETA, 1. 48210 - OTXANDIO (VIZCAYA)

Issued on: 1998-07-02
 Renewed on: 2012-07-21
 Validity date: 2015-07-21

AENOR
 Asociación Española de Normalización y Certificación
 Avelino BRITO
 Chief Executive Officer

AENOR Asociación Española de Normalización y Certificación
 Quality management system certification body accredited by ENAC with accreditation Nº 01/C-SC003
 - IQNet - AENOR is a partner of the IQNet NETWORK (The International Certification Network)

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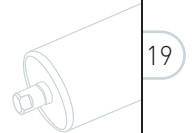
are carried out in: BO ZELAIETA, 1. 48210 -

Carlos Fernández Ramón
 DIRECTOR DEL LABORATORIO

ROLLERS

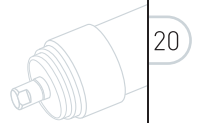
5-25

Metallic Roller RM



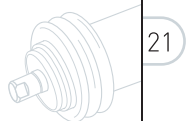
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Impact Roller RA



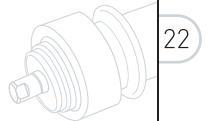
20

Return Roller with discs RLD



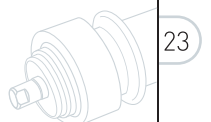
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Return Roller with 1 flat end RL1T



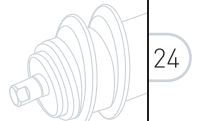
22

Return Roller with 2 flat ends RL2T



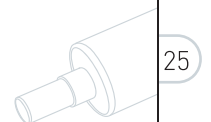
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Helicoidal Return Roller RLH



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Guide Roller RGU



25



Introduction

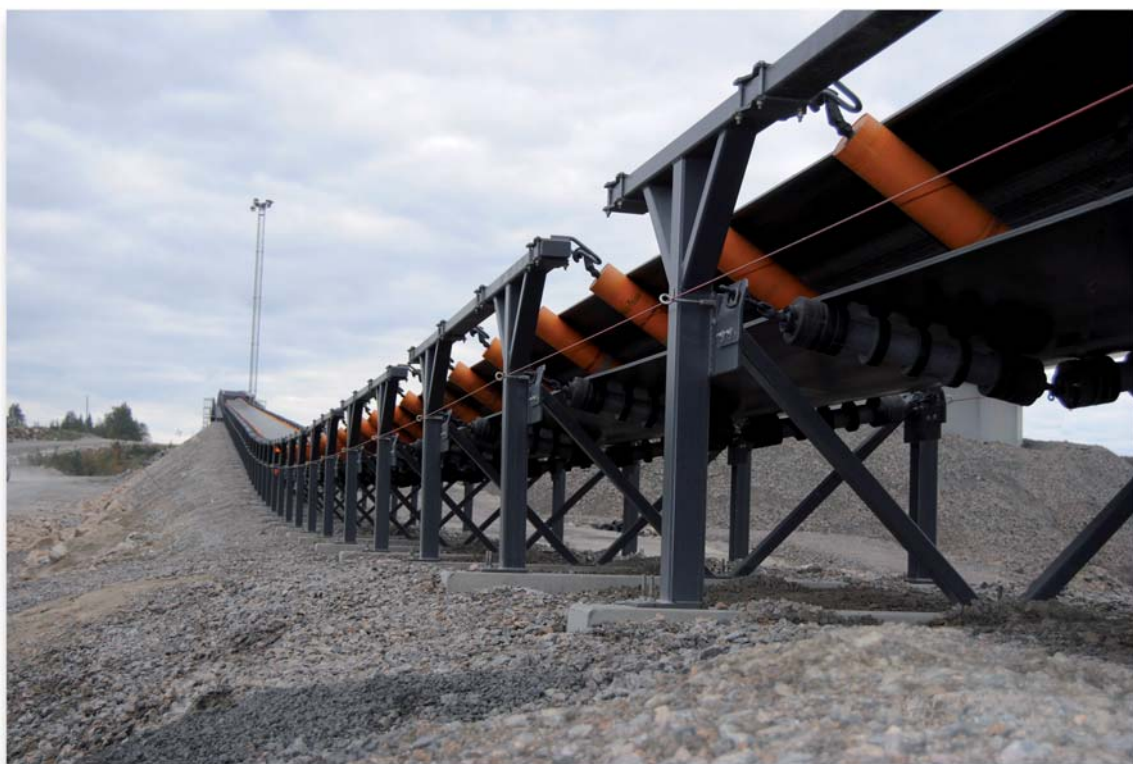
The roller is one of the key components of a conveyor belt. Having optimally operating rollers means that the conveyor will operate as designed.

Well designed rollers are therefore vital. Exact dimensional calculations are needed, the best raw materials must be selected and the implementation of a precise assembly system is required in order to manufacture the highest quality rollers. ULMA Conveyor, with over 50 years of experience, has a deep understanding of the variables involved when it comes to manufacturing rollers for various applications and working conditions.

Rollers manufactured by ULMA Conveyor are divided into two areas according to working conditions:

MEDIUM DUTY ROLLERS: are rollers used for standard working applications. The low frictional force and low Total Indicated Runout (TIR) allow for satisfactory returns: low energy consumption and reduced noise emission. In addition, the patented seal system ensures successful roller durability.

HEAVY DUTY ROLLERS: are rollers suitable for high speeds and load bearing conditions. Besides having the advantages of the MEDIUM DUTY rollers, the robust, yet light design of these rollers allow the conveyor to withstand very high loads.



Technical information

The basic variables in the design of a roller are:

- Correct selection of the axle diameter and bearing: the axle is supported by the structure upon free supports. The axle, after receiving a given load flexes which causes the bearings to be misaligned.

A misalignment greater than $\alpha = 10'$ shows that a roller was not well designed.

- Selection of the tube diameter to limit the rotational speed and indentation force. It is also necessary to select tubes with minimal ovality and imperfections.

- Tight assembly tolerances in order for the bearing to function smoothly. Perfect alignment and concentricity between components.

1. Welded steel pipe, cold shaped .
Material 5235JR (other qualities available)
DIN 17100 and ISO 1129 thicknesses.

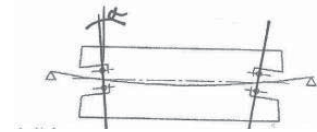
2. Axle made of C15 or C45.
Chamfered ends to facilitate assembly of the bearings. ISO h6 or js6 tolerance between shaft and bearing.

3. Bearing housing. It is obtained by stamping, forging or machining, depending on the working application of the roller. Setting tolerance on the bearing N7 -M7 .

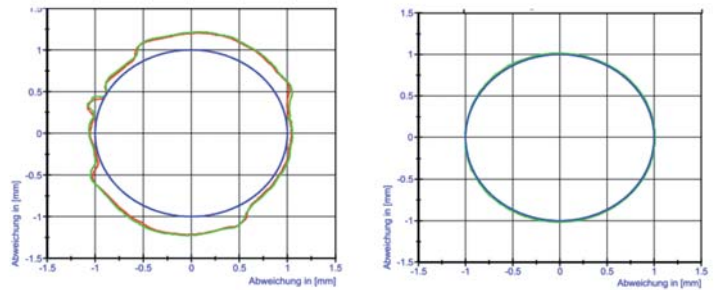
4. Rigid ball bearings. Bearing cage clearance C3/C4. Bearing greased for life.

5. Patented sealing system. The advanced sealing system design allows the bearings to be well protected against various contaminants such as dust, water, etc., which the rollers may come in contact with. The system has four protection barriers that prevent outside contaminants from entering and coming in contact with any of the interior working parts. Likewise, the roller contains an added protection barrier to guard it

against internal particles and condensation build up. The retaining baffle geometry allows for air to escape out, but stops it from entering because of the differences in air pressure. Moreover, it glides on a low friction surface, providing an effortlessly smooth working roller.



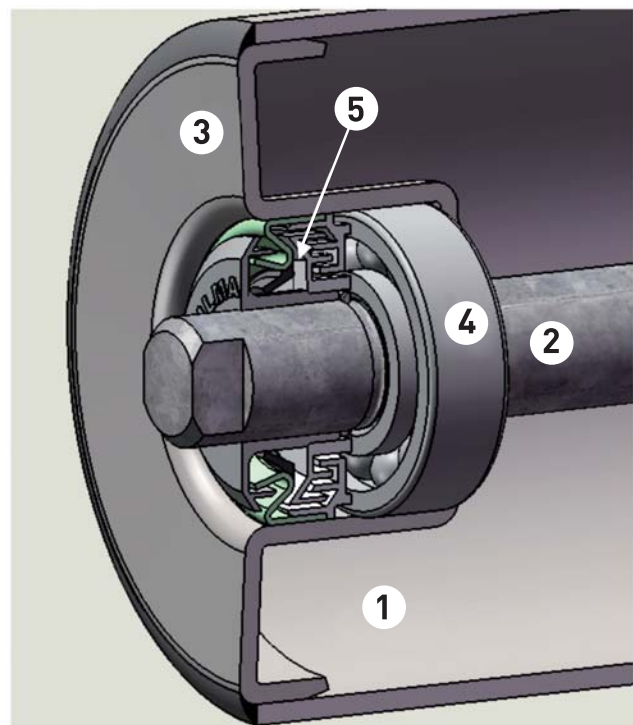
Bearing misalignment (α)



Different geometries of tubes

Geometry of a tube used in a standard roller

Geometry of a tube used in a Low-noise roller (ULMA)



View of the MDA model.

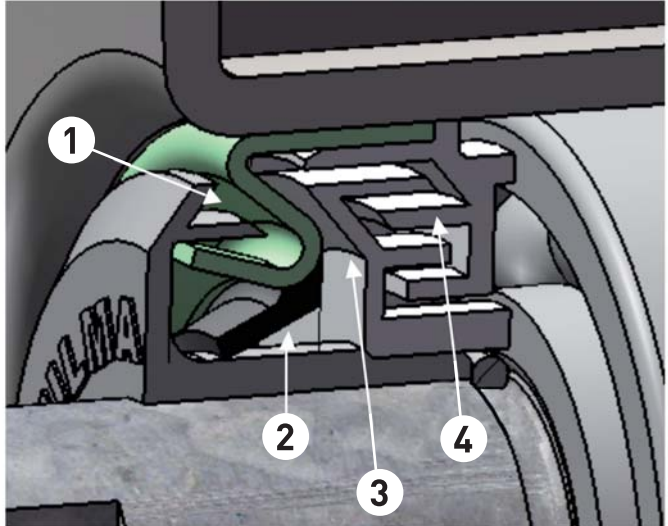
MDA Model

1. First baffle in labyrinth design. Designed to prevent the ingress of liquid and solid contaminants.
Patented geometry.

2. Contact seal. Designed to prevent the ingress of liquid contaminants and minute solids with minimal friction due to its special geometry and seal material. Its geometry allows air to escape due to increases in air pressure from within the roller, while at the same time stopping contaminated or humid air from entering.

3. Labyrinth antechamber. This chamber is filled with grease in order to trap particles pollutants before reaching the other interior chambers.

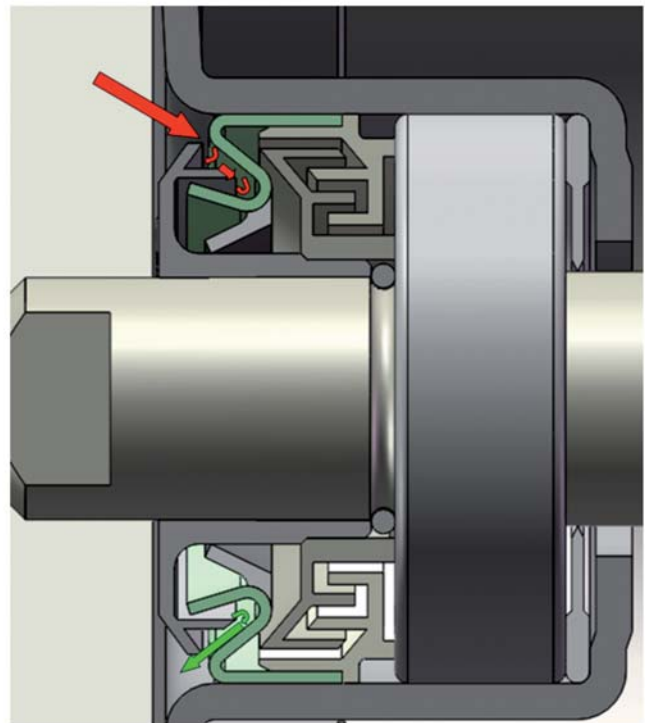
4. Multiple labyrinth design. Designed for the effective release of liquids and solids and to deposit them in the antechamber.



Detail on the MDA model

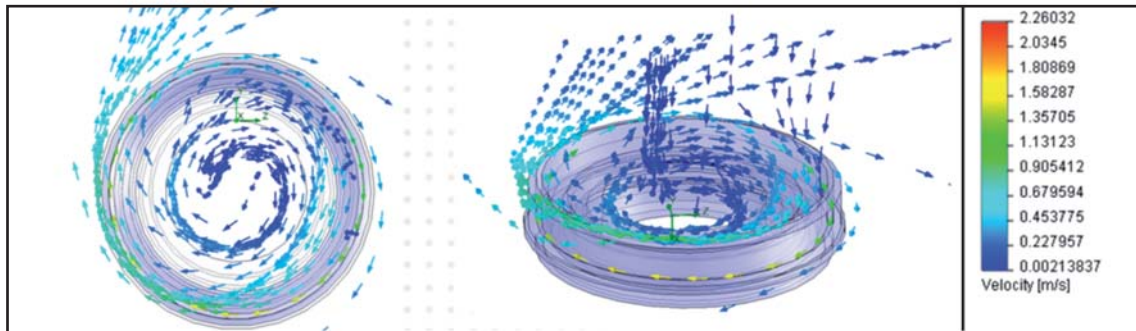
Entry of contaminants

Exit of contaminants



Operation of the multiple labyrinth design

The system's first protective labyrinth, patented by ULMA Conveyor, ejects unwanted particles due to the precise design of the components of the seal. With the help of centrifugal force, this effect is multiplied.



Internal labyrinth performance

The expulsion effect of the second set of labyrinths is scientifically proven.

The combined work between the two sets of labyrinths and the low friction baffle ensures the efficient operation of the seal system.

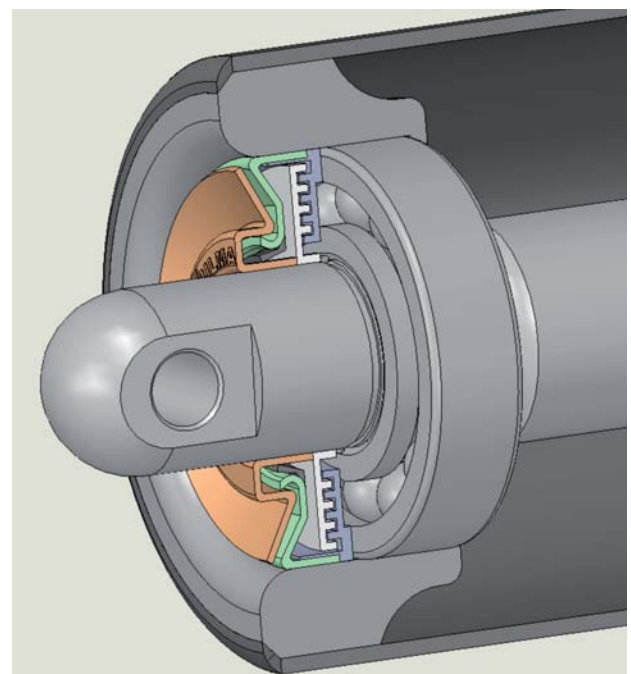
HDA Model

Roller model HDA is designed to perform in the most severe applications: high loads, high speeds and vibrations. The design of this roller allows for controlled vibrations at high speeds, which in turn, reduces noise.

The HDA model minimises environmental impact. Due to its effortless start up and smooth operation, the HDA model consumes less operational energy on the conveyor, lowering the emission of CO₂ into the environment.

All of this is achieved by taking into account the following parameters:

- Efficient bearings with high load capacity and low friction.
- Special lubricant with anti-rust and low friction properties.
- Tight tolerances, controlled within the bearing, and its housing.
- High precision assembly of the roller using state of the art machinery. This allows the bearing to be mounted inside the roller with minimal misalignment, which allows it to maintain its high load capacity and performance. A roller with concentricity defects, extreme tightness between its various metal parts or containing low quality raw materials greatly reduces the life of the roller. Because of this, ULMA Conveyor emphasises the use of high quality raw materials in the manufacturing process of its rollers.
- Roller design is optimised.



View of the HDA model

The HDA model seal system has all the advantages of the MDA model. The outer cap is made of a special metallic material which minimises abrasion. An example can be found in environments where work is done with wet iron ore, which causes the front rollers to suffer abrasion. The HDA model minimises this problem.

Roller selection

Selecting the correct roller is vital when designing a conveyor belt. In relation to the load, there are three design parameters that limit the capacity of that same load:

1. The mechanical strength of the roller components.
2. The maximum oscillating limit of the bearing. When bearing flex occurs on the axle, tube and bearing housing, the bearing rings are forced to work in misaligned positions. The difference in oscillation that is produced between the two bearings rings should not be allowed to exceed 10 minutes in duration. If this is disregarded, the life of the bearing is drastically reduced.
3. The nominal bearing life. This factor is a parameter that is used to size the bearing, depending on the load on the bearing and the speed at which it performs.

The formula used for calculating the load supported by the roller is obtained with the following formula:

$$Kr = R + L1 \left(G + \frac{Qr}{3,6 V} \right) Fc. Fi. Fv$$

- Where:
- Kr = Load upon a roller (Kg).
 - R = Weight of rotating parts of the roller (Kg).
 - L 1 = Space between troughs (m).
 - G = Belt weight (Kg/m).
 - Qr = Flow of material on the belt (Tn/h).
 - V = Linear velocity of the belt (m/s).
 - Fc = Load factor.
 - Fi = Impact factor.
 - Fv = Roller life factor.

SPACING GUIDE (L1)		BETWEEN CONDITIONS (m)	
Belt width	Upper		Lower
	Specific material weight (Tm/m ³)		
	≤ 0,6	> 0,6	
400	1,35	1,35	3
500	1,35	1,20	3
650	1,20	1,10	3
800	1,20	1,00	3
1.000	1,00	1,00	3
1.200	1,00	1,00	3
1.400	1,00	1,00	3
1.600	1,00	1,00	3
1.800	1,00	1,00	3
> 2.000	1,00	1,00	2,4

BELTH WIDTH GUIDE (G)		
Belt width	Weight (Kgr/m)	Total thickness
400	4	8
500	5	
650	6,5	
800	8,5	8,5
1.000	13	11
1.200	15,5	
1.400	18	
1.600	25	13
1.800	30	14
2.000	33	

LOAD FACTOR (Fc)					
Fc=1	Fc=0,55	Fc=0,60	Fc=0,63	Fc=0,66	Fc=0,70

IMPACT FACTOR (Fi)			
Size of material	Belt speed		
	< 2,5 m/s	2,5 a 4 m/s	4 a 5 m/s
< 100 m/m	1	1	1
175 a 300 m/m	1,025	1,060	1,110
175 a 300 m/m	1,075	1,140	1,280
325 a 500 m/m	1,260	1,600	2,100

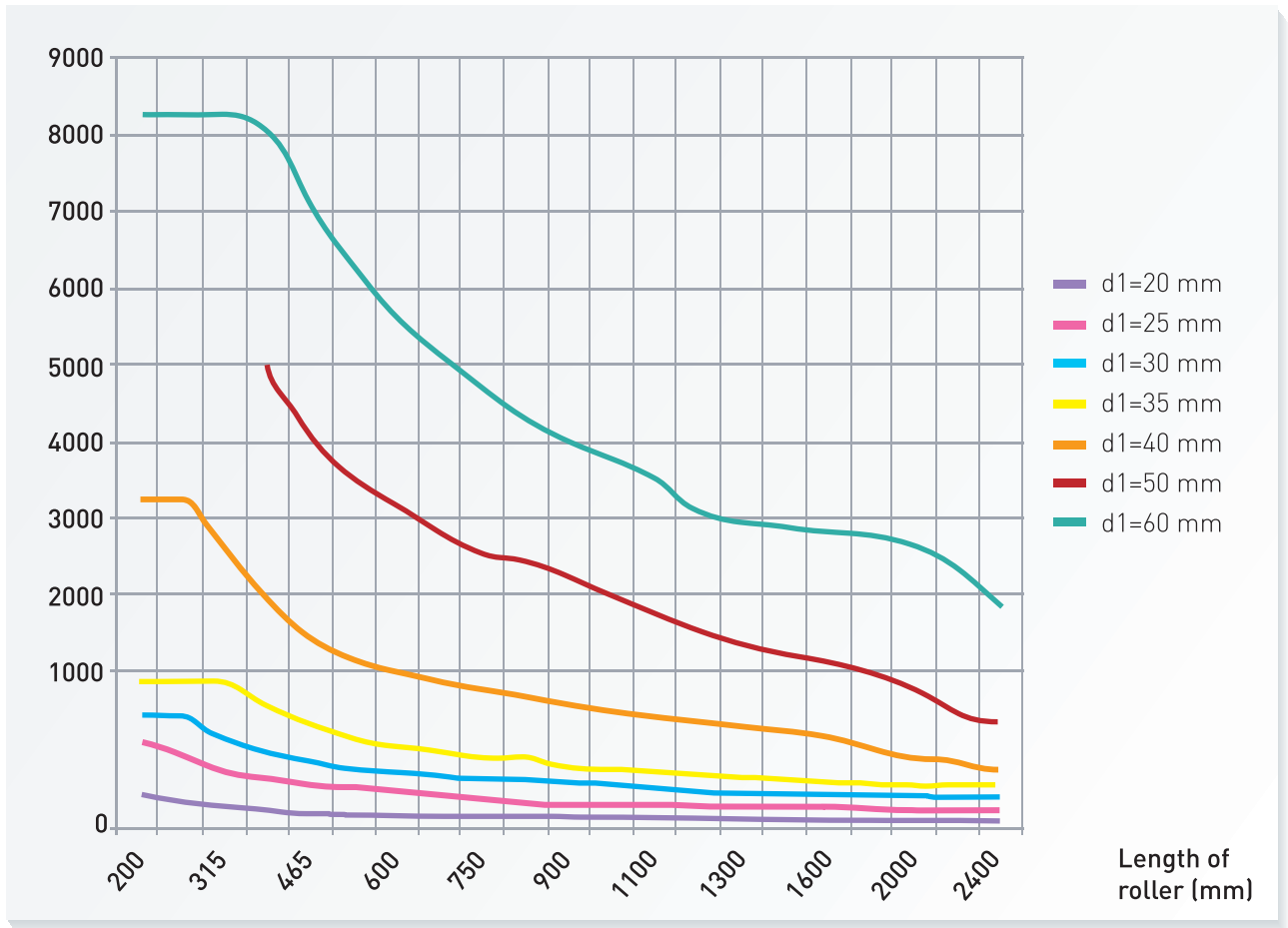
ROLLER LIFE FACTOR (FV)					
Operational hours	10.000	20.000	30.000	40.000	50.000
Fv	0,70	0,87	1	1,10	1,18

MAXIMUM CONVEYANCE SPEED (m/s)			
Belt with	A	B	C
400	3	2,5	2,5
500	4	3	3
650	4	3,5	3,3
800	4,5	4	3,7
1.000	5	4,2	4
1.200	5,5	5	4,5
1.400	6	5,5	4,5
1.600	6	5,5	4,5
≥ 1.800		6	5

RECOMMENDED MINIMUM BELT WIDHT		
Minimum width	Material dimensions (m/m)	
	(A) Uniform	(B) Mixed
400	65	100
500	85	150
650	125	225
800	160	300
1.000	200	400
1.200	250	500
1.400	300	600
1.600	380	700
1.800	450	800
2.000	500	900
2.000	550	1.000

- A- Grains and other materials of relative fluidity and low abrasion.
 B- Coal from mines and moderately abrasive materials.
 C- Hard ores, stones and highly abrasive materials.

Load to be supported by the roller (kg)



Load capacity for Lh: 30.000 h.



SPECIFIC WEIGHT AND CHARACTERISTICS OF SOME MATERIALS			
Material	Exact Weight	Natural slope &°	Maximum inclination of &° the conveyor
Almonds	0,47	30 - 40	15
Alumina powder	0,7 - 0,8	18	
Asbestos mineral	0,8	45	30
Anthracite	0,8 - 1		10
Dry Clay	1,8	35	20
Wet clay	2,20	15 - 20	17
Rice	0,6 - 0,7	30	8
Asphalt	1,3 - 1,4	30 - 45	27
Sand	1,4 - 1,6		15 - 24
Sugar	0,8 - 1	30 - 45	10 - 20
Sulphur	1,10		15 - 20
Bakelite powder	0,45 - 0,65	45	
Mud	1,6		
Wet Mud	2		
Compact dry bauxite	1,2 - 1,36	30	17
Peanuts in their shells	0,25 - 0,3	30 - 30	8
Cocoa beans	0,45 - 0,7	26	13
Dry coffee beans	0,35 - 0,4	34 18	
Green coffee beans	0,50	25	13
Dry lime	0,8 - 0,95	40 - 45	15
Limestone 50 to 70	1,45 - 1,50		18
Limestone 25 to 50	1,35 - 1,45		15
Limestone powder	1,20 - 1,30		
Anthracite Carbon	0,80 - 0,95	26	15
Carbon lignite	0,70 - 0,90	37	20
Mine coal	0,72 - 0,87		18
Bonded carbon	1 - 1,10		18
Dry barley	0,60 - 0,75	22	15
Portland cement	1,30 - 1,50	37	18
Clinker cement	1,30 - 1,50		15
Wood ash	0,60 - 0,75		
Coal ash	0,65 - 0,72		
Rye	0,68 - 0,79		
Copper ore	1,90 - 2,40	30 - 45	20
Mine Coke	0,50 - 0,55	45	20
Quartz pieces	1,50 - 1,60	33	18
Blast furnace slag	0,90	28	28
Phosphate	1,20 - 1,36	25 - 40	23
Graphite mineral	1 - 1,20	25	
Graphite Flakes	0,65	28 - 45	5
Granite pieces	1,40 - 1,60	34	35
Gravel washed and sieved	1,36	49	12
Peas	0,70 - 0,80	30	8
Wheat flour	0,56 - 0,64		17
Ice chunks	0,57 - 0,72	20	4
Iron ore	1,30 - 1,60	35	18
Scrap metal	1,30 - 1,60	35	18
Concrete	1,85 - 2		12 - 22
Coal	0,75 - 0,85		
Standard brick	1,90 - 2,15		17
Refractory brick	2,20 - 2,30		17
Wood chips	0,25-0,50	30 - 35	20
Corn grain	0,90	30	10
Apples	0,30		8
Loam	1,26		
Marble	1,50 - 1,70		10 - 17
Mica sheets	0,50		
Mica powder	1		
Iron ore	2,10 - 2,90		18
Nickel ore	1,60		
Potash ore	1,20 - 1,35		12 - 15
Potatoes	0,65 - 0,75		12 - 15
Stones between 0 & 50 mm	1,50	35	15
Stones between 100 & 250 mm	1,40 - 1,60	40	18
Pyrite	2 - 2,50		18 - 22
Unwashed beetroot	0,65 - 0,80	33 - 42	15 - 20
Washed beetroot	0,50 - 0,60	33 - 42	12 - 15
Beetroot wet pulp	0,40 - 0,72		15
Sea salt	1,10 - 1,30	15	25
Coarse salt	0,65 - 0,90	30	18
Soybeans	0,70 - 0,80	20 - 35	12 - 15
Dry ammonium sulphate	1,10	30	18
Dry dirt	1,10 - 1,30	30	20
Wet dirt	1,65 - 1,80	45	22
Wheat	0,48 - 0,82	25	10 - 12
Crushed glass	1,30 - 1,95	38	20
Glass debris	1,35 - 1,95	20 - 30	16
Gypsum powder	1,10 - 1,30	40	18
Zinc crushed	2,50 - 2,60	38	20

Roller coatings

There are certain applications where a metallic roller suffers excess wear due to corrosion, material surface adhesion, abrasion, etc. To avoid these situations ULMA Conveyor rollers have special coatings which help to extend their production life.

- Rubber-Coating.
- HDPE coating.
- Ceramic coating.
- Polyurethane Coating.

Available in different thicknesses and hardnesses

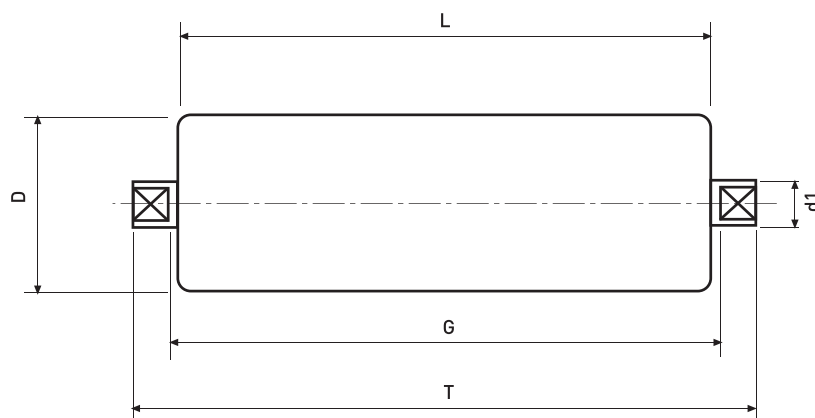
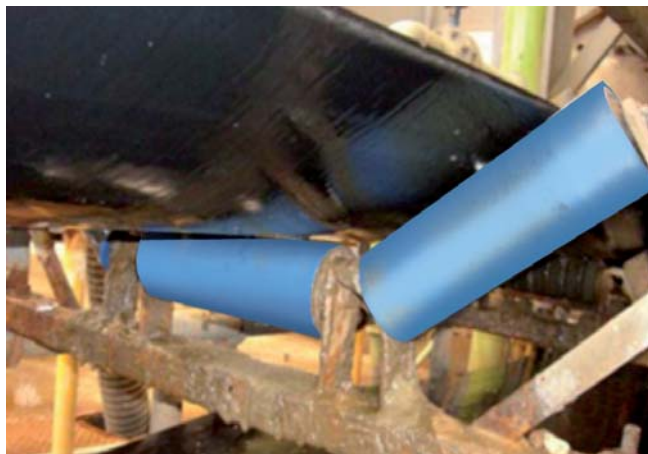


Coated metal roller

HDPE Roller

The HDPE [High Density Polyethylene] Roller from ULMA Conveyor, is designed to work in corrosive and abrasive environments, as they have higher abrasion resistance compared to metallic rollers.

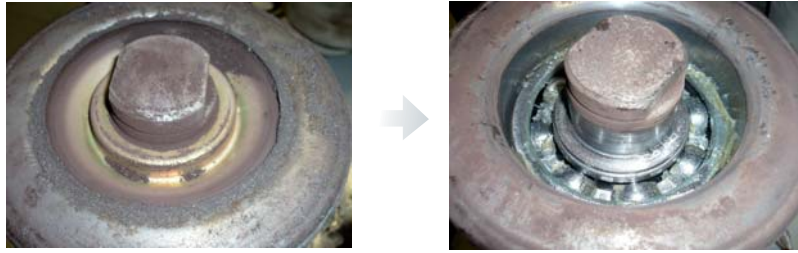
It is also a very suitable roller where load weight is critical, for example in areas with difficult access. It weighs 50% less than a metallic roller of similar dimensions. Its use is common place when metal detectors or magnetic separation is implemented.



D	d1
89	20
	25
	30
102	20
	25
	30
114,3	20
	25
	30
127	20
	25
	30
133	20
	25
	30
139,8	20
	25
	30
152,4	20
	25
	30
159	25
	30

Effectiveness of the sealing system

The various sealing system designs must pass very stringent dust and water resistance tests before the rollers can be released into the market.



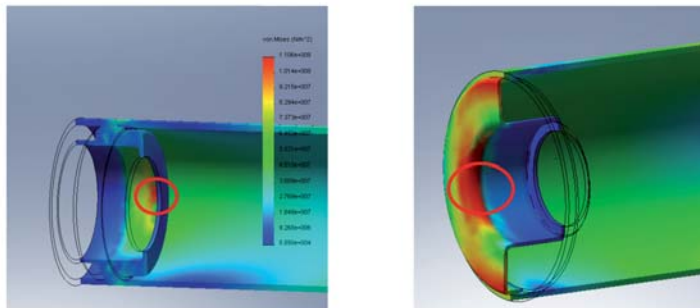
Results from a dust resistance test.



Water resistance tests.

Designs are optimised according to weight & stiffness

The technical department of ULMA Conveyor optimises its designs according to the customer's requirements. Our experience, as well as the powerful manufacturing software we use, allows us to vastly optimise the design of our rollers.



Roller design.

Production process quality control

The quality and condition of the various components are monitored during the manufacturing process of ULMA Conveyor Rollers. Once the production quality is assured, special attention is given to correctly assembling the various components, ensuring tolerances and torques such as:

- A good fit between shaft and bearing.
- A good fit between bearing and housing.
- Concentricity tolerances.

ULMA Conveyor has assembly lines in which these variables are carefully controlled. It is these quality control measures which allow us to achieve satisfactory results in roller starting effort, TIR and concentricity.



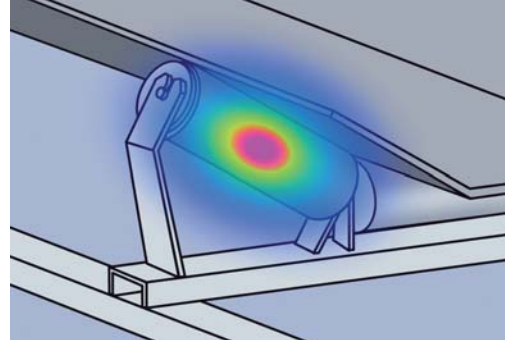
Production methods.

Low noise rollers

Noise pollution created by conveyor belts around urban areas is considered an environmental pollutant which is regulated in many places around the world. Part of the noise emitted by the conveyor is produced by the rollers, primarily due to the interaction between the belt and rollers.

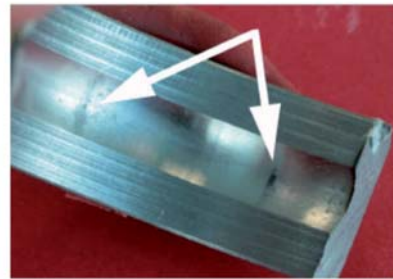
Conveyor ULMA has a low noise roller where the following parameters are carefully controlled:

- Tube ovality.
- MIS [Maximum instantaneous slope] Related to the surface profile of the tube.
- Noise damping (Cancels out the ringing bell effect).
- Roller vibrations.
- Operation of the bearings.



Bearing control

In many cases the roller must work in harsh conditions where the following variables may come into play: high loads, dynamic loads, vibrations and high speeds. In these situations the bearing must be of the highest quality. ULMA Conveyor has an R&D centre and laboratories where bearings from various manufacturers are analysed and tested.



Following these control measures, ULMA ensures the highest quality and lifespan of the rollers it produces.

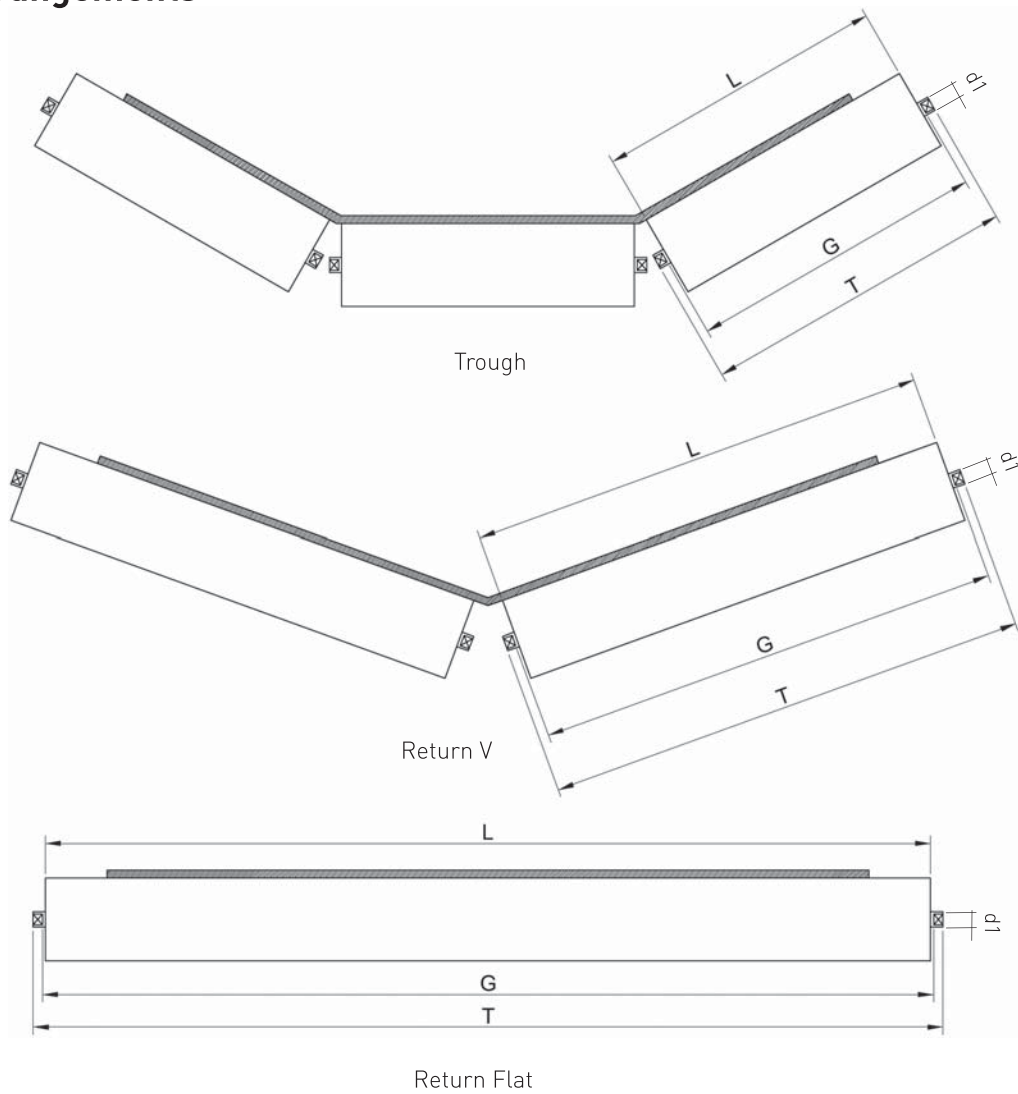
Roller energy consumption control

Rollers manufactured by ULMA Conveyor pass through dynamic stress control tests that are directly related to energy consumption. This will ensure that the bearings will perform properly.



Dynamic stress control test of the roller and its bearing performance.

Roller arrangements



Dimensions according to DIN 15207

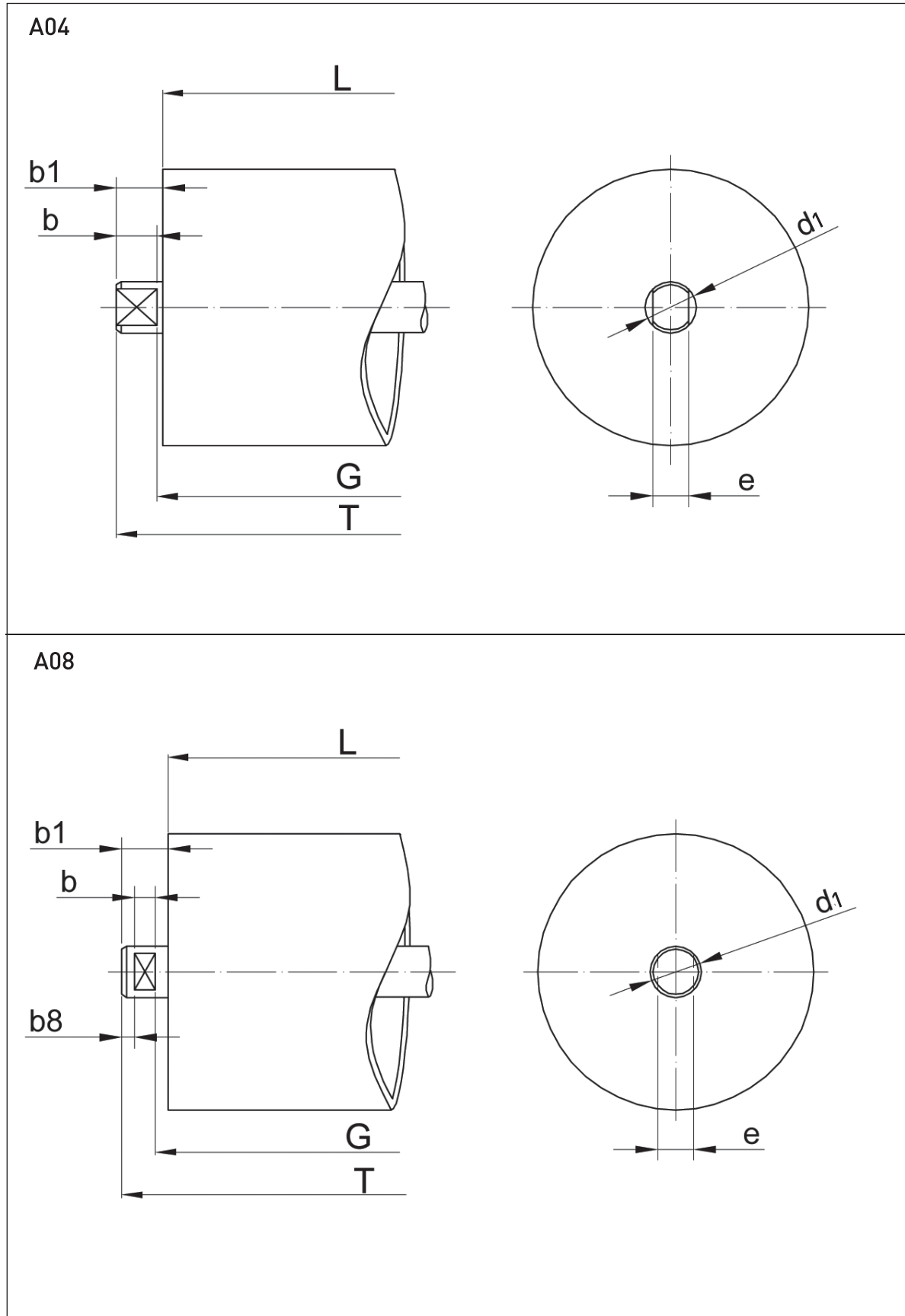
Belt width	3 Rollers				2 Rollers				1 Roller			
	L	G	d1 Ø20 T	d1 > Ø20 T	L	G	d1 Ø20 T	d1 > Ø20 T	L	G	d1 Ø20 T	d1 > Ø20 T
400	160	168	186	192	250	258	276	282	500	508	526	532
500	200	208	226	232	315	323	341	347	600	608	626	632
650	250	258	276	282	380	388	406	412	750	758	776	782
800	315	323	341	347	465	473	491	497	950	958	976	982
1000	380	388	406	412	600	608	626	632	1150	1158	1176	1182
1200	465	473	491	497	700	708	726	732	1400	1408	1426	1432
1400	530	538	556	562	800	808	826	832	1600	1608	1626	1632
1600	600	608	626	632	900	908	926	932	1800	1808	1826	1832
1800	670	678	696	702	1000	1008	1026	1032	2000	2008	2026	2032
2000	750	758	776	782	1100	1108	1126	1132	2200	2208	2226	2232
2200	800	808	826	832	1200	1208	1226	1232	2400	2408	2426	2432

(mm)

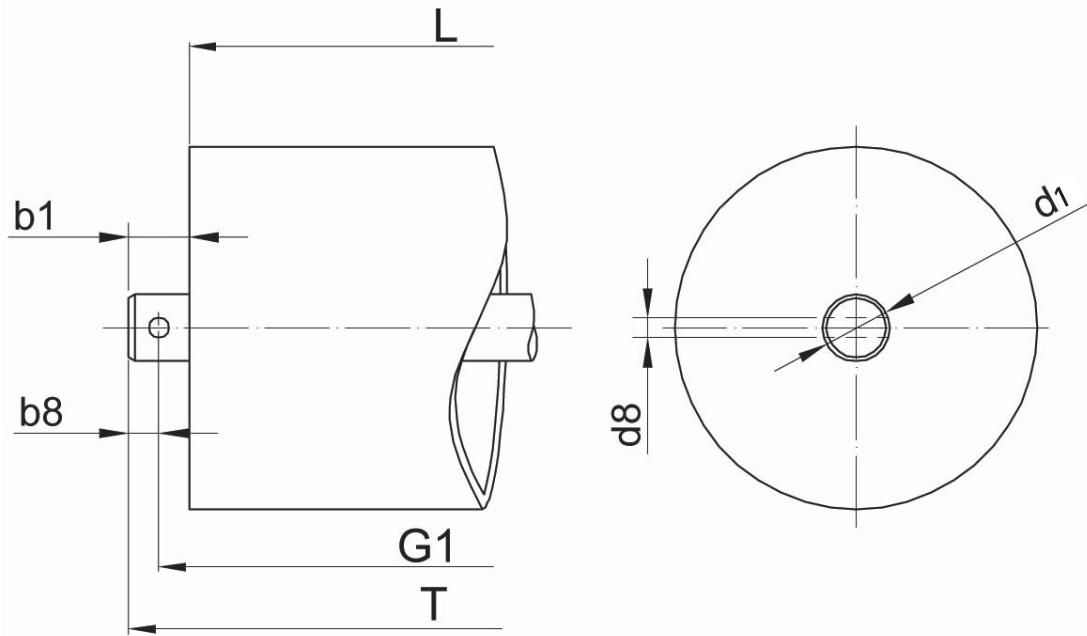
(mm)

(mm)

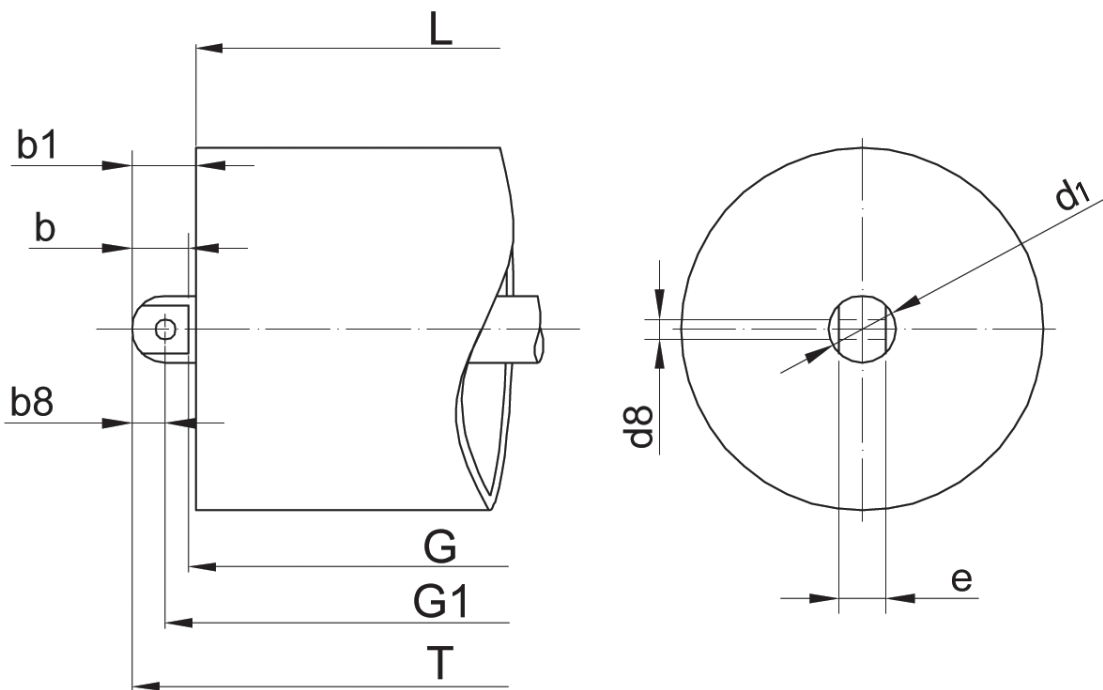
Common axle ends

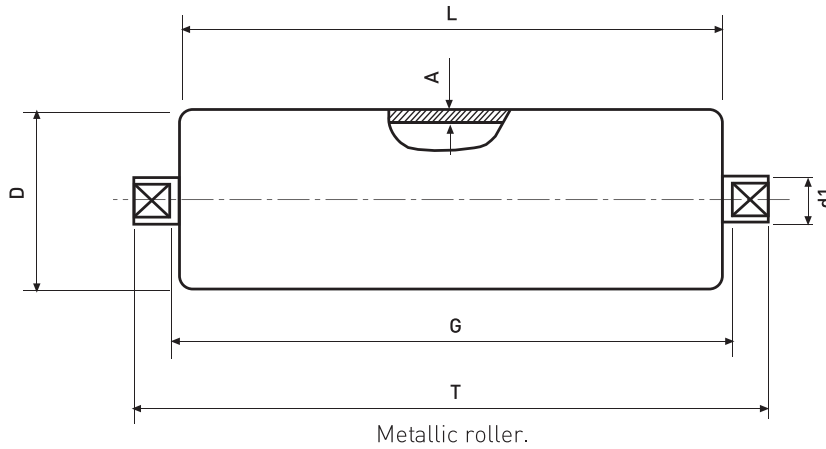
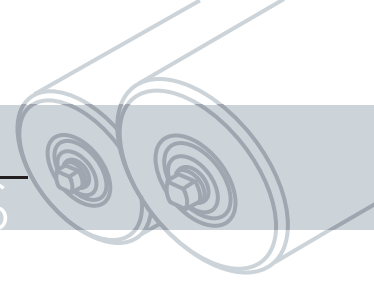


A02



A016





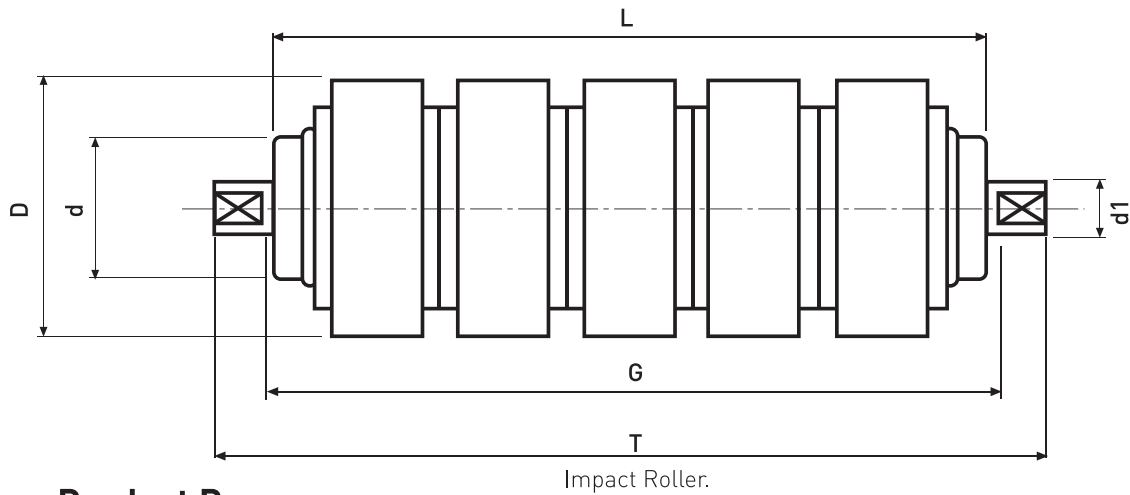
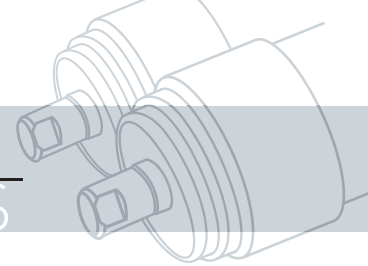
Product Range

Bearing	(D) Tube diameter (mm)														(A) Tube thickness (mm)		
	D/A	63.5/3	70/3	76/3	89/3	102/3.5	108/3.5	114/3.6	127/4	133/4	139/4.5	152/4	159/4.5	165/4.5	178/5	193/6.3	219/8
6204																	
6205																	
6305																	
6306																	
6307																	
6308																	
6310																	
6312																	

Roller weights

D	d1(mm)	Roller length L (mm)															
		200	250	315	380	465	530	600	670	750	950	1150	1400	1600	1800	2000	2200
63	20	2/1.3	2.4/1.6	2.9/1.9	3.4/2.2	4.1/2.7	4.6/3	5.2/3.5	5.7/3.8	6.4/4.3	8/5.3	9.6/6.4	11.6/7.7	13.2/8.8	14.8/9.9	16.4/10.9	18/12
	89	20	2.4/1.8	2.9/2.2	3.6/2.6	4.2/3	4.8/3.6	5.4/4.1	6/4.5	6.6/5	7.8/5.7	9.7/7.0	11.2/8.2	14/10.2	16.1/11.27	18/13.1	20/14.5
89	25	3.1/2.2	3.6/2.5	4.3/3.1	5/3.4	5.9/4	6.6/4.4	7.4/5.0	8.3/5.6	9.2/6.2	11.4/7.6	13.6/9.0	16.4/10.8	18.6/12.2	20.8/13.6	23/15	25.2/16.4
	30	3.5/2.2	4.2/2.6	5/3.2	5.8/3.5	6.9/4.1	7.8/4.5	8.7/5	9.6/5.7	10.7/6.3	13.3/7.7	15.9/9.1	19.1/10.9	21.7/12.3	24.3/13.8	26.9/15.2	29.5/16.5
101.6	20	2.9/2.2	3.4/2.6	4.2/3.2	4.9/3.7	5.9/4.5	6.6/5	7.4/5.7	8.2/6.3	9.1/7.0	11.4/8.7	13.7/10.5	16.6/12.7	18.8/14.4	21.1/16.2	23.4/17.9	25.7/19.7
	25	3.6/2.7	4.3/3.2	5.1/3.8	5.9/4.3	7.0/5.1	7.8/5.6	8.7/6.2	9.6/6.9	10.6/7.6	13.2/9.4	15.7/11.1	18.9/13.3	21.4/15	24/16.8	26.5/18.5	29/20.2
108	20	3/2.3	3.6/2.8	4.4/3.4	5.1/3.9	6.2/4.8	6.9/5.3	7.8/6.1	8.6/6.7	9.6/7.5	12/9.3	14.4/11.2	17.4/13.5	19.7/15.3	22.1/17.2	24.5/19	26.9/20.9
	25	3.7/2.8	4.4/3.3	5.3/4.0	6.1/4.5	7.3/5.4	8.1/5.9	9.1/6.6	10/7.3	11/8.0	13.7/9.9	16.4/11.8	19.7/14.1	22.3/15.9	25/17.8	27.6/19.6	30.3/21.5
	30	3.7/2.6	5.7/3.7	6.6/4.2	7.6/4.8	8.9/5.6	9.9/6.3	11/7	12/7.5	13.2/8.3	16.2/10.1	19.3/12.1	23/14.3	26.1/16.3	29.1/18.1	32.1/19.9	35.2/21.9
	35					9.8/6.2	10.8/6.7	11.9/7.3	13/7.9	14.2/8.5	17.3/10.1	20.4/11.7	24.3/13.7	27.4/15.3	30.5/16.9	33.6/18.5	36.7/20.1
	40							17/10	18/10.5	19/11.1	22/12.5	25/13.9	29.5/15.6	32.5/17	35/18.4	39/19.8	42/21.2
133	20	4.1/3.6	4.8/4.2	5.7/4.9	6.5/5.6	7.7/6.6	9.0/7.4	9.10/8.3	11.1/9.2	12.4/10.3	15.5/12.8	18.5/15.3	22.4/18.5	25.5/21.1	28.6/23.7	31.7/26.2	34.8/28.8
	25	4.2/3.5	5.7/4.6	6.8/5.5	7.8/6.2	9.3/7.4	10.4/8.2	11.5/9.0	12.7/10	14/11.0	17.4/13.6	20.7/16.1	24.9/19.3	28.3/21.9	31.6/24.4	35/27	38.3/29.5
	30	5.1/4.1	6.8/4.8	8.1/6.4	9.2/6.4	10.8/7.5	12/8.4	13.3/9.3	14.6/10.1	16.1/11.2	19.9/13.8	23.6/16.4	28.2/19.5	31.9/22.1	35.7/24.7	39.4/27.2	43.1/29.8
	35					12/7.9	13.4/8.8	14.8/9.5	16.2/10.5	17.9/11.6	22/14.2	26.1/16.7	31.2/19.9	35.3/22.4	39.4/25	43.5/27.5	47.6/30.1
	40							19.1/13.5	20.6/14.3	22.3/15.3	26.5/17.7	30.7/20.1	35.9/23.1	40.1/25.5	44.3/27.9	48.5/30.3	52.7/32.7
159	25	6.6/5.7	7.7/6.6	9.2/7.9	10.7/9.1	12.7/10.8	14.1/11.9	15.8/13.3	17.4/14.7	19.2/16.2	23.8/20	28.4/23.8	34.1/28.5	38.7/32.3	43.3/36.1	47.9/39.9	52.5/43.7
	30	6.4/5.4	8.7/6.7	10.3/7.9	11.6/8.8	14/10.7	15.6/12	17.4/13.4	19.1/14.6	21.1/16.2	26/19.9	31/23.8	37.2/28.5	42.2/32.4	47.1/36.1	52.1/39.9	57/43.8
	35					4.9/10.8	16.6/12	18.5/13.2	20.4/14.7	22.5/16.2	27.9/20.1	33.2/23.8	39.9/28.6	45.2/32.3	50.6/36.2	55.9/39.9	61.5/43.7
	40							22.8/15.4	24.9/16.8	27.2/18.3	33/22.1	38.9/25.9	46.2/30.7	52.1/34.5	57.9/38.3	63.8/42	69.6/45.9
	50							27.8/20.5	30.3/22.1	33.1/24.0	40.1/28.6	47.1/33.2	55.8/38.6	62.8/43.5	69.8/48.1	76.8/52.7	83.8/57.3
	60							32.3/25.1	35.2/27.2	38.6/29.6	47.0/35.6	55.4/41.6	65.9/49.1	74.3/55.1	82.7/61.1	91.1/67.1	99.5/73.1
193	40							27.2/19.4	29.6/20.9	32.3/22.6	39.1/26.8	45.9/31.0	54.4/36.2	61.2/40.4	68.0/44.6	74.8/48.8	81.6/53.0
	50							35.6/28.4	39.0/30.9	42.8/33.8	52.4/41.0	62.0/48.2	74.0/57.2	83.6/64.4	93.2/71.6	102.8/78.8	112.4/86.0
	60							41.8/31.0	45.7/33.6	50.1/36.6	61.1/44.0	72.5/51.4	85.8/60.6	96.8/76.0	107.8/75.4	118.8/82.8	129.8/90.2

Roller weight Kg/Roller rotating parts weight [Kg].

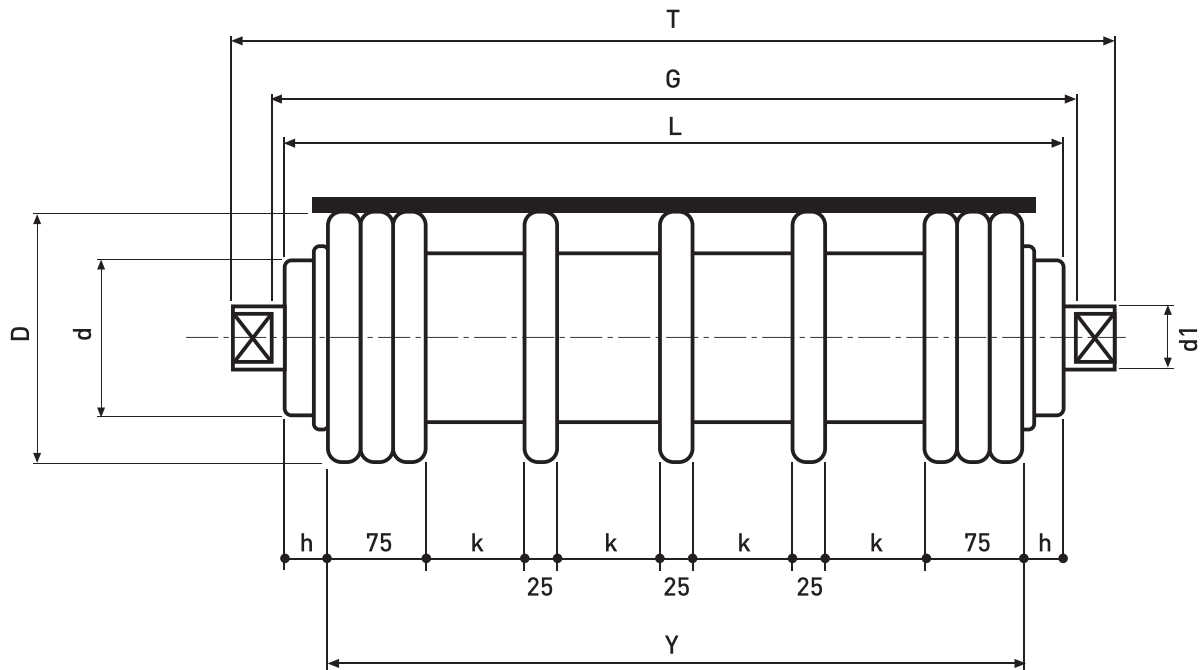
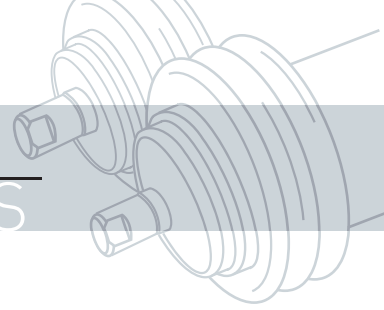


Product Range

RA																	
6204	D(mm)	89	108	133	159	127	133	139,7	152	159	152	159					
	d(mm)	63,5	63,5	70	70	89	89	89	89	89	108	108					
6205	D(mm)	127	133	139,7	152	159	152	159	165	180	193	180	193	215	215	252	
	d(mm)	89	89	89	89	89	108	108	108	108	108	133	133	133	159	159	
6305	D(mm)	127	133	139,7	152	159	152	159	165	180	193	180	193	215	215	252	
	d(mm)	89	89	89	89	89	108	108	108	108	108	133	133	133	159	159	
6306	D(mm)	127	133	139,7	152	159	152	159	165	180	193	180	193	215	215	252	
	d(mm)	89	89	89	89	89	108	108	108	108	108	133	133	133	159	159	
6307	D(mm)	152	159	165	180	193	180	193	215	215	252						
	d(mm)	108	108	108	108	108	133	133	133	159	159						
6308	D(mm)	152	159	165	180	193	180	193	215	215	252						
	d(mm)	108	108	108	108	108	133	133	133	159	159						
6310	D(mm)	180	215	215	252												
	d(mm)	133	133	159	159												
6312	D(mm)	215	252														
	d(mm)	159	159														

Roller weights

d/D	d1(mm)	Roller length L (mm)															
		200	250	315	380	465	530	600	670	750	950	1150	1400	1600	1800	2000	2200
63/89	20	2,2/1,5	2,7/1,9	3,9/2,8	4,6/3,3	5,7/4,2	6,4/4,7	7,2/5,3	8/6	8,9/6,6	11,3/8,5	13,5/10,2	16,4/12,4	18,7/14,2	20,9/15,9	23,3/17,7	25,5/19,4
63,5/108	20	3,2/2,4	3,8/3	4,7/3,6	5,6/4,3	6,9/5,4	7,8/6,1	8,7/6,8	9,8/7,8	10,9/8,6	13,8/11	16/12,8	20,1/16,1	23,1/18,6	25,8/20,8	28,8/23,2	31,5/25,4
89/133	20	3,9/3,1	4,7/3,9	5,8/4,7	7,1/5,8	8,5/7,1	9,6/7,9	11,0/9,1	12,0/10,0	13,5/11,2	16,8/14	20,6/17,3	24,7/20,7	28,5/24	31,8/26,8	35,6/30	38,4/32,8
	25	5,1/3,7	6/4,4	7,1/5,3	8,5/7,4	9,6/7,3	11,2/8,5	12,3/9,3	13,8/10,5	15,4/11,8	19/14,6	23/17,5	27,5/21,3	31,5/24,6	35,1/27,4	39,1/30,6	42,7/33,4
89/159	20	4,6/4,1	5,7/5	6,8/6	8,2/7,2	9,7/8,5	12,1/10,7	13,6/12	15,3/13,5	17/15	24/21	28,6/25,7	34,8/31,3	39,7/35,7	44,4/39,9	49,5/44,5	54,6/49,3
	25	6,6/5,2	7,7/6,1	9,4/7,6	11,1/9	13,5/11,1	15,1/12,4	16,9/13,9	19,2/15,9	21,1/17,5	26,7/22,3	31,8/26,3	38,5/32,3	44,2/37,3	49,3/41,6	55/46,5	60,1/50,8
108/159	20	5,2/4,6	6,8/6,1	8,3/7,4	9,7/8,7	12,1/10,9	13,6/12,2	15,3/14	17/15,3	18,7/16,8	24/21,6	28,6/25,8	34,8/31,3	39,7/35,7	44/39	49,5/44,5	54,6/49,1
	25	6,2/5,8	7,3/5,7	8,8/7	10,3/8,2	12,5/10,1	13,9/11,2	15,6/12,6	17,4/14,1	19,1/15,5	24,1/19,7	28,7/23,2	34,6/28,4	39,5/32,6	44,2/36,5	49,1/40,6	53,7/44,4
	30			9,7/7,2	11,4/8,5	13,6/10,2	15,3/11,6	17,1/13	19,1/14,6	20,9/15,9	26,2/20	31,2/23,9	37,5/28,7	42,9/33	47,9/36,8	53,2/40,9	58,2/44,8
	40					17,5/12,6	19,5/14,1	22/15,8	24,3/17,4	26,7/19	33/23,4	39/27,7	47/33	53,4/37,2	59,6/41,6	66/46	72,2/50,2
108/180	20	6,7/6,2	8/7,4	9,8/8,9	11,5/10,5	14,3/13	16/14,7	18/16,7	20/18,4	22/20,2	28,4/26	33,9/31	41/37,6	46,9/42,9	52,4/47,9	58,5/53,5	64,5/59
	25	7,2/5,8	8,6/7	10,9/9,1	13,1/11	15,8/13,4	17,3/14,6	19,7/16,7	22/18,7	24,5/20,9	30,7/26,3	37/31,5	44,6/38,4	50,8/43,9	57,1/49,4	63,2/54,7	69,5/60,2
	30			11,8/9,3	14,2/11,3	17/13,6	18,7/15	21,2/17,1	23,6/19,1	26,3/20,1	31,4/25,5	39,5/32,2	47,5/38,7	54,2/44,3	60,8/49,7	67,3/55	74/60,6
	40					21,1/16,2	23,7/18,2	26,5/20,3	29,3/22,4	32,3/24,6	40/30,2	47,5/35,9	56,8/42,7	64,4/48,4	72/54	79,6/59,6	87,1/65,2
108/193	20	7,6/7	8,9/8,2	10,9/10	12,9/11,8	15,9/14,7	17,9/16,5	20,2/18,9	22,4/20,6	24,6/22,7	31,6/29,3	37,8/34,9	45,9/42,7	53,36/48,3	58,5/54	65,3/60,3	71,6/66,4
	25	7,7/6,3	9,3/7,7	11,9/10,1	14,4/12,3	17,4/15	19/16,3	21,7/18,7	24,4/21,1	27,1/23,5	34,1/29,7	41,1/35,6	49,6/43,4	56,5/49,6	63,5/55,8	70,4/61,9	77,4/68,1
	30			12,8/10,3	15,5/12,6	18,6/15,2	20,4/16,7	23,2/19,1	26/21,5	28,9/23,9	36,2/30	42/34,9	52,5/43,7	59,9/50	67,2/56,1	74,5/62,2	81,9/6,5
	40					22,8/17,9	25,6/20	28,6/22,4	31,6/24,7	34,9/27,1	43/33,6	51,3/39,6	61,3/47,2	69,5/53,4	77,6/59,5	85,9/65,9	94/72
133/215	20	9,6/9	11,4/10,7	14/13	16,4/15,4	20,3/19,1	22,8/21,5	25,7/24,4	28,5/26,8	31,4/29,5	40,3/37,9	48,2/45,2	58,6/55	66,7/62,7	74,6/70,1	83,1/78,1	91,7/86
	25	9,4/8	11,8/10,2	15,1/13,3	18,3/16,2	21,9/19,5	24,1/21,4	27,4/24,4	30,8/27,5	34,2/30,6	43,1/38,7	51,8/46,3	62,5/56,3	71,3/64,4	80,1/72,4	88,9/80,4	97/83,3
	30			16,1/13,6	19,4/16,5	23,1/19,7	25,4/21,7	28,9/24,8	32,4/27,9	36/31	45,3/39,1	54,4/47,1	65,5/56,7	74,6/64,7	83,9/72,8	93/80,7	102/88,6
	35					24,2/19,7	26,7/21,7	30,3/24,7	33,9/27,8	37,7/31	47,3/39	56,8/47	68,4/56,7	77,9/64,6	87,5/72,7	97/80,6	106,3/88,6
159/215	25			17,3/16	20,8/19,3	23,7/21,8	27,4/25,2	30,1/27,7	33,8/31,1	37,5/34,7	46,5/43,5	53,4/52,45	67,3/62	77,1/71,6	86,9/80,6	95,7/88,7	105/97
	30			16,4/14	19,4/16,5	23,5/20,1	25,9/22,2	29,3/25,2	32,7/28,2	36,4/31,4	45,4/39,2	54,5/47,2	65,7/56,9	74,8/64,9	83,8/72,7	93/80,7	102/88,6
	35					24,4/19,9	26,9/21,9	30,4/24,8	34/27,9	37,8/31,1	47,3/39	56,7/46,9	68,4/56,7	77,8/64,5	87,3/72,5	96,8/80,4	106,3/88,4
	40					27,8/23	31,2/25,7	34,9/27,6	38,6/30,5	42,5/33,6	52,5/41,6	62,5/49,5	74,8/59,3	84,8/67,2	94,7/75,1	104,8/85,1	114,7/107
	50					34,2/26,5	37,56/28,9	42,2/32,4	46,8/36	51,8/39,7	64,2/49	76,5/58,3	91,8/69,7	104,2/79	116,6/88,4	129/97	141,4/107
	60					40,4/29,3	44,18/37,7	49,3/34,3	54,4/38,7	59,9/42,5	73,6/51,8	87,4/61,2	104/72,5	118/82,9	131,8/91,2	145,6/100,5	159,4/109,8



Return roller with discs.

Product Range

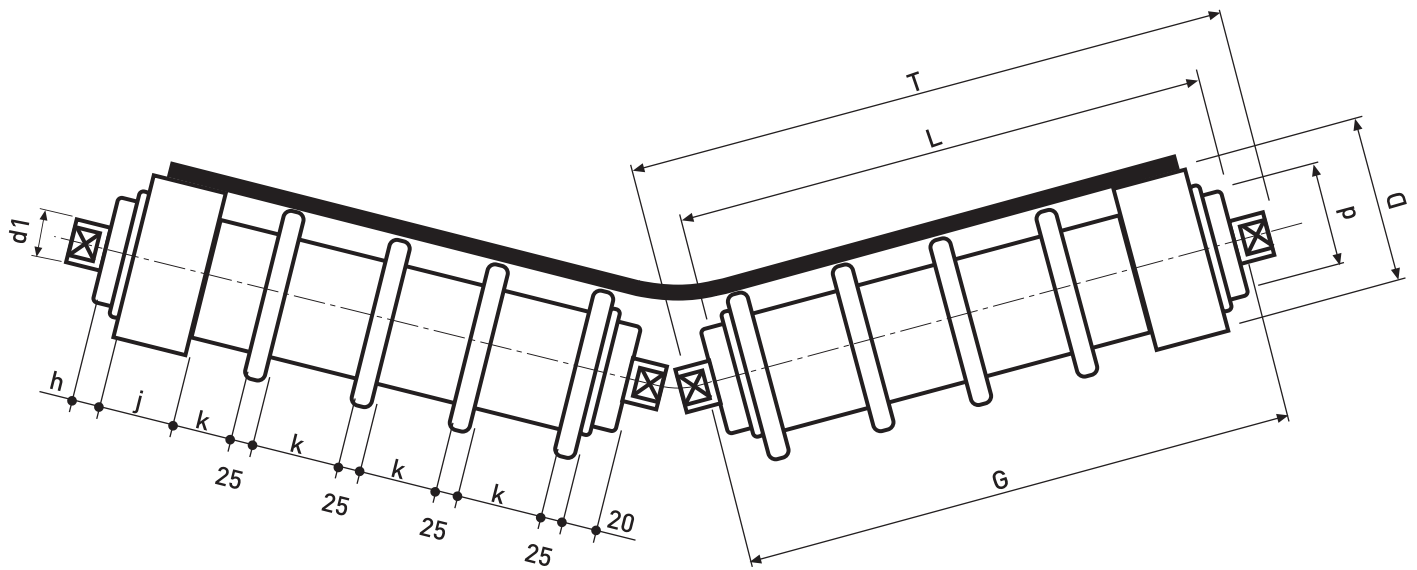
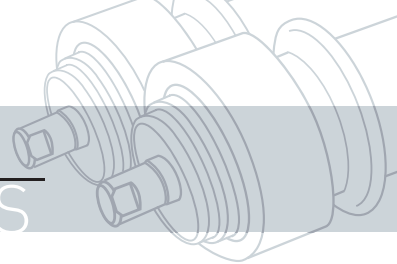
6204	D(mm)	108	108	133	159	133	152			
	d(mm)	63,5	70	70	89	89	89			
6205	D(mm)	133	152	159	180	180	193	180	193	219
	d(mm)	89	89	89	108	108	108	114,3	133	159
6305	D(mm)	133	152	159	159	180	193	180	193	219
	d(mm)	89	89	89	108	108	108	114,3	133	159
6306	D(mm)	133	152	159	159	180	193	180	193	219
	d(mm)	89	89	89	108	108	108	114,3	133	159
6308	D(mm)	159	180	193	193	219				
	d(mm)	108	108	108	133	159				

Belt width	400	500	650	800	1000	1200	1400	1600	1800	2000	2200
h	77,5	72,5	72,5	100	127,5	137,5	137,5	150	125	137,5	137,5
k	85	85	95	100	85	100	95	100	100	95	100
y	345	455	605	750	895	1125	1325	1500	1750	1925	2125
N°	3+1+3	3+2+3	3+4+3	3+4+3	3+6+3	3+7+3	3+9+3	3+10+3	3+12+3	3+14+3	3+15+3

Roller weights

d/D	d1(mm)	Roller length L (mm)										
		500	600	750	950	1150	1400	1600	1800	2000	2200	2400
63.5/108	20	5.8/4.5	6.6/5.0	8.1/6.2	10/7.6	12/9	14.3/10.8	16.4/12.4	17.2/12.7	19.1/14.1	21/15.5	22.7/16.7
	20	7/5.7	8/6.5	9.8/7.9	12.2/9.8	14.64/11.8	17.4/13.9	20/16	21/16.5	23.3/18.3	26.6/21.1	27.7/21.7
89/133	25	9.5/7.4	9.9/7.5	11.8/8.8	14.3/10.5	17/12.4	20.3/14.8	23.1/16.8	25.7/18.6	28.6/20.7	29.9/21.3	32.4/23.0
	30	9.6/6.6	11.3/7.8	13.3/8.9	16.1/10.6	19/12.5	22.57/14.6	25.6/16.5	28.4/18.2	31.52/20.2	34.5/22.1	37.3/23.8
89/159	20	7.9/6.6	9.0/7.5	11/9.2	13.7/11.3	16.4/13.5	19.6/16	22.4/18.45	23.56/19	26.1/21.2	28.7/23.3	31/25.11
	25	10.45/8.4	10.9/8.5	13/10	15.7/12	18.7/14.2	22.3/16.8	25.4/19.1	28.2/21.2	31.4/23.6	32.9/24.3	35.6/26.26
108/159	30	10.5/7.6	12.4/8.9	14.6/10.3	17.7/12.2	20.9/14.4	24.8/16.8	28.1/19.1	31.2/21.1	34.6/23.4	37.9/25.6	41.1/27.6
	20	9.2/7.9	10.5/8.9	12.8/11.0	15.9/13.5	19/16.2	22.7/19.2	26/22.0	27.3/22.8	30.3/25.3	33.4/28	36/30.1
108/193	25	11.68/9.6	12.1/9.7	14.5/11.5	17.5/13.8	20.9/16.35	25/19.4	28.4/22.2	31.6/24.5	35.2/27.3	36.7/28.2	39.8/30.5
	30	11.8/8.8	13.9/10.4	16.3/12	19.8/14.3	23.4/16.8	27.7/19.8	31.4/22.4	35/24.8	38.7/27.5	42.4/30	46/32.5
	40	17.8/12.6	20.2/14	23.7/16	28/18.4	32.7/21	38.3/24.1	43/27	47.5/29.4	52.3/32.3	57/35	61.5/37.5
108/193	20	10.4/9.1	11.8/10.3	14.6/12.6	18/15.6	21.6/18.7	25.7/22.2	29.5/25.5	31/26.45	34.3/29.4	37.8/32.3	40.9/34.8
	25	12.8/10.7	13.3/11	15.9/13	19.3/15.5	23/18.4	27.4/21.9	31.2/24.9	34.7/27.6	38.6/30.7	40.3/37.7	43.7/34.3
	30	13/10	15.2/11.7	17.9/13.6	21.7/16.3	25.7/19.1	30.4/22.5	34.5/25.5	38.3/28.2	42.5/31.2	46.5/34.2	50.4/37
40	19/13.8	21.6/15.4	25.3/17.6	30/20.3	35/23	41/26.8	46/30	50.8/32.7	55.9/36	61/39	65.8/41.8	

Roller weight Kg/Roller rotating parts weight (Kg).



Return roller with 1 flat end.

Product Range

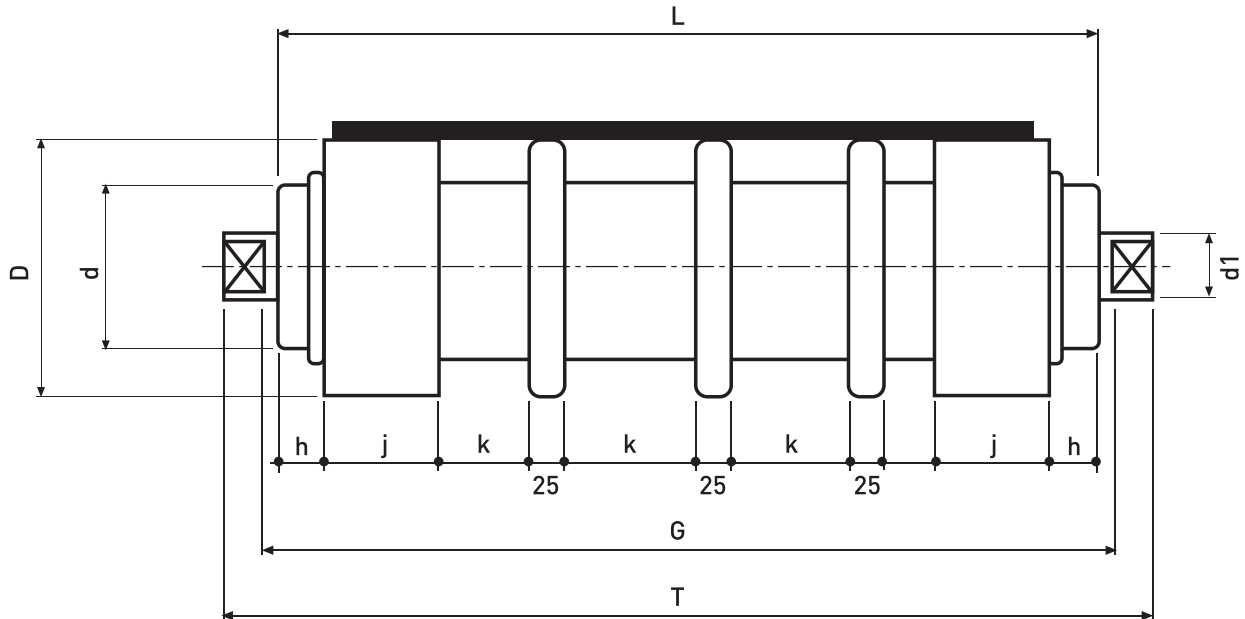
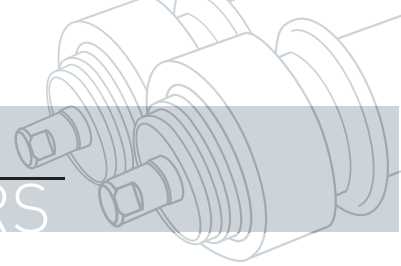
6204	D(mm)	108	108	133	127	133	152			
	d(mm)	63	70	70	89	89	89			
6205	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6305	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6306	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6308	D(mm)	159	180	193	193					
	d(mm)	108	108	108	133					

Belt width	400	500	650	800	1000	1200	1400	1600	1800	2000	2200
h				30	65	30	40	35	30	25	20
j				100	200	200	240	240	240	240	240
k				60	60	70	80	80	80	80	80
N°				3	4	4	4	5	6	7	8

Roller weights

d/D	d1(mm)	Roller length L (mm)							
		465	600	700	800	900	1000	1100	1200
89/133	20	6.9/5.5	8.5/6.8	9.8/7.8	12.3/10	13.6/11.1	14.8/12	16.1/13	16.9/13.9
	25	8.3/6.4	10.1/7.6	11.5/8.7	14.1/10.9	15.5/11.9	16.9/12.9	18.3/13.9	19.1/14.4
	30	9.5/6.75	11.45/7.95	12.94/8.9	15.65/11	17.2/12	18.7/13	20.23/14	21.75/14.9
89/159	20	8.1/6.7	9.9/8.2	11.3/9.3	14.8/12.5	16.3/13.8	17.6/14.8	19.1/16	20.1/17.0
	25	9.5/7.6	11.5/9	13/10.2	16.6/13.4	18.2/14.6	19.7/15.7	21.3/16.4	22.1/17.4
	30	11/8.2	13.2/9.7	15/11.0	18.1/13.5	19.9/14.7	21.7/16	23.4/17.1	25.2/18.3
108/193	20	10.7/9.3	13/11.3	14.8/12.8	19.8/17.5	21.6/19.1	23.5/20.7	25.4/22.3	26.8/23.7
	25	12.2/10.3	14.7/12.2	16.6/13.8	21.7/18.5	23.6/20	25.7/21.7	27.7/23.3	29/24.2
	30	14.4/11.6	17.4/13.9	19.6/15.6	23.8/19.8	26.1/21	28.43/22.7	30.7/24.4	33/26.1
	40	19.29/14.4	22.59/16.4	25.16/18.0	30.94/22.73	33.54/24.4	36.15/26.0	38.76/27.6	41.36/29.2

Roller weight Kg/Roller rotating parts weight (Kg).



Return roller with 2 flat ends.

Product Range

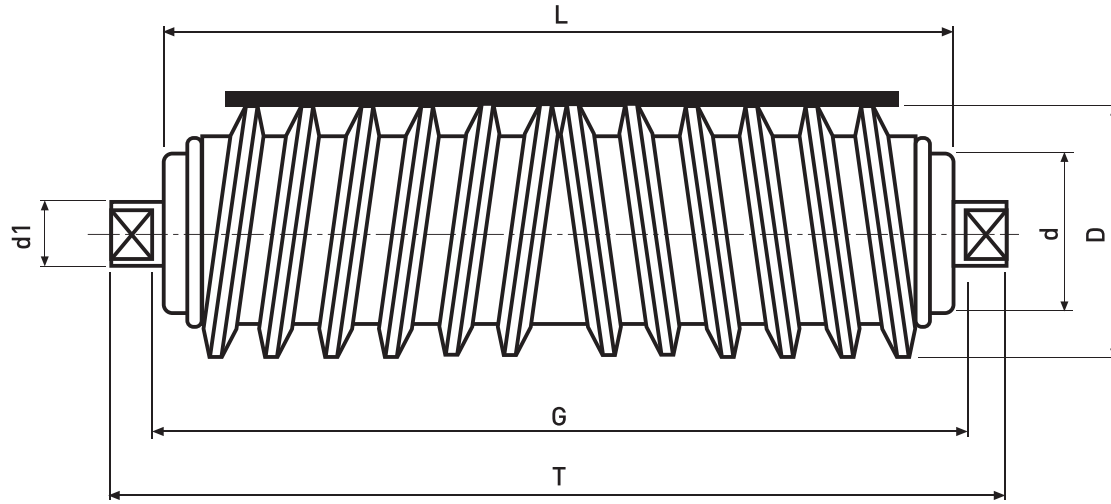
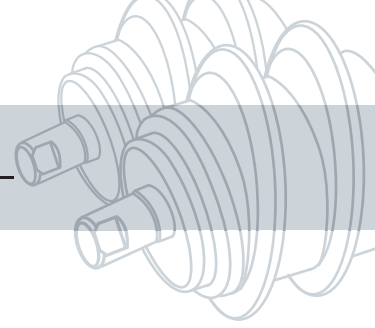
6204	D(mm)	108	108	133	127	133	152			
	d(mm)	63	70	70	89	89	89			
6205	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6305	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6306	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6308	D(mm)	159	180	193	193					
	d(mm)	108	108	108	133					

Belt width	400	500	650	800	1000	1200	1400	1600	1800	2000	2200
h	12,5	20	22,5	35	50	45	50	55	60	65	70
j	80			240					280		
k	60	60	70	60	60	70	70	70	70	70	70
N°	3	4	5	4	6	8	10	12	14	16	18

Roller weights

d/D	d1(mm)	Roller length L (mm)										
		500	600	750	950	1150	1400	1600	1800	2000	2200	2400
89/133	20	8.2/6.9	9.8/8	11.5/9.6	16.2/13.8	18.6/15.7	21.6/18	24.2/20.2	26/21.5	27.8/22.8	30.6/25.1	32.9/26.9
	25	9.7/7.6	11.1/8.6	13.3/10.3	18.3/14.5	21/16.3	24/18.4	27.1/20.8	29.9/22.8	32.7/24.9	34/25.4	36.6/27.2
	30	10.9/8	12.4/8.9	14.6/10.2	20/14.5	22.8/16.2	26.4/18.5	29.5/20.4	32.5/22.3	35.5/24.25	38.5/26.1	41.6/28
89/159	20	9.9/8.6	11.4/9.9	13.9/12	19.6/17.1	22.5/19.6	26.1/22.6	29.2/25.27	31.46/26.9	33.6/28.6	37/31.5	39.8/33.8
	25	11.4/9.4	13/10.6	15.7/12.6	21.6/17.8	24.6/20.1	28.2/22.6	31.9/25.6	35.28/28.2	38.5/30.7	40.12/31.5	43.1/33.8
	30	12.8/9.9	14.6/11.1	17.2/12.8	23.5/18.1	26.9/20.3	31.2/23.25	34.7/25.7	38.3/28.2	42/30.6	45.5/33.1	49/35.5
108/193	20	13.5/12.23	15.6/14.1	18.9/17.06	26.7/24.3	30.7/27.8	35.6/32.1	39.9/35.9	42.9/38.39	45.8/40.8	50.5/45	54.2/48.2
	25	15/13	17.2/14.8	20.6/17.6	28.3/24.6	32.4/27.8	37/31	42/35.7	46.34/39.3	50.6/42.8	52.7/44	56.7/47.3
	30	16.9/14	19.2/15.7	22.6/18.3	30.9/25.5	35.3/28.8	40.9/33	45.6/36.6	50.3/40.2	55/43.8	59.7/47.3	64.4/51
	40	22.4/17.1	25/18.8	28.7/21	40.1/30.4	44.8/33.2	51/37	56.2/40.1	61.4/43.3	66.6/45.5	71.8/49.8	77/53

Roller weight Kg/Roller rotating parts weight (Kg).



Helicoidal return roller.

Product Range

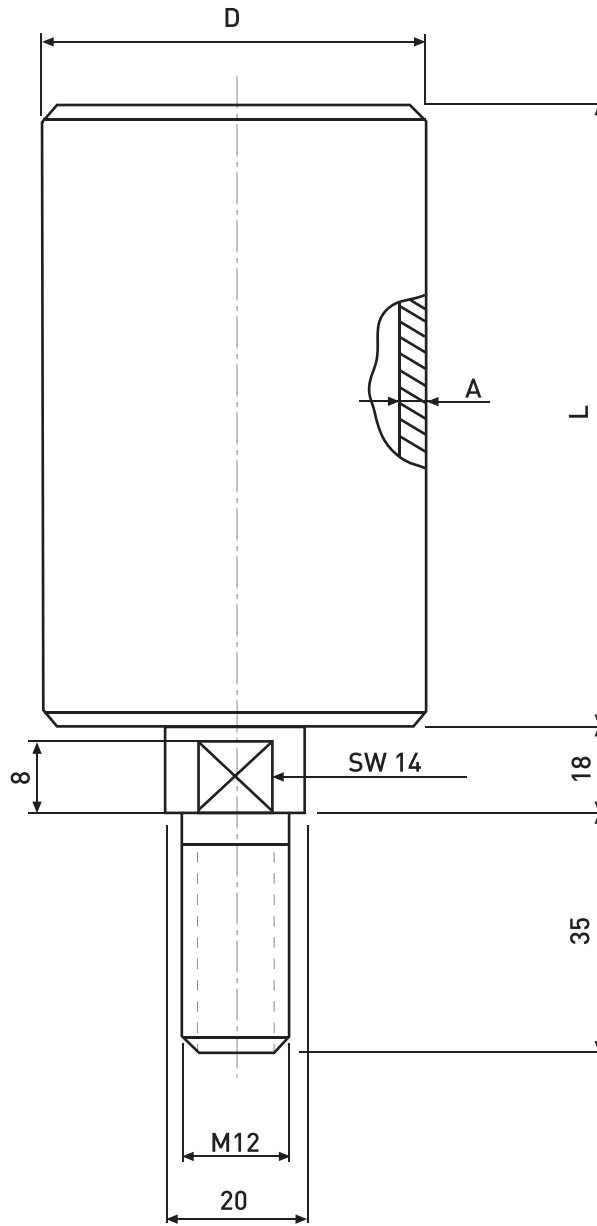
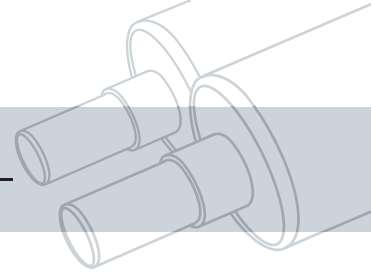
RLH

6204	D[mm]	108	133	159
	d[mm]	63,5	89	89
6205	D[mm]	133	159	180
	d[mm]	89	89	108
6305	D[mm]	133	159	180
	d[mm]	89	89	108
6306	D[mm]	133	159	180
	d[mm]	89	89	108

Roller weights

d/D	d1[mm]	Roller length L (mm)										
		500	600	750	950	1150	1400	1600	1800	2000	2200	2400
63.5/108	20	7.2/5.9	8.3/6.7	10.2/8.2	12.9/10.5	15.6/12.6	18.9/15.4	21.6/17.6	24.3/19.8	27/22	29.7/24.2	32.4/26.4
	25	8/6.8	9.3/7.7	11.4/9.5	14.4/12	17.4/14.5	21.1/17.6	24.1/20.2	27.2/22.7	30.2/25.3	33.2/27.7	36.2/30.3
89/133	25	9.6/7.5	10.6/8.2	13.4/10.4	16.5/12.7	19.7/15.1	23.8/15.2	27/20.6	30.1/23	33.4/25.5	36.7/28	40/30
	30	10.9/8	12.5/9	15.3/11	18.8/13.3	22.4/15.8	27.3/19.3	31.1/22	35/24.8	39/27.7	43/30.6	47/33.5
89/159	20	9.5/8.2	10.9/9.4	13.4/11.5	17/14.6	20.5/17.7	25/21.4	28.5/24.5	32/27.5	35.6/30.6	39.2/33.7	42.7/36.8
	25	11/9	12.2/9.8	15.4/12.4	19/15.2	22.6/18.1	27.4/21.9	30.9/24.6	34.6/27.5	38.4/30.5	42.2/33.6	43/36.6
	30	12.3/9.3	14.1/10.6	17.2/12.9	21.2/15.7	25.3/18.7	30.8/22.9	35.1/26	39.5/29.8	44.1/39.7	48.6/36.2	53.1/39.6

Roller weight Kg/Roller rotating parts weight (Kg).



Guide roller

D	A	L
63,5	3	100
89	3	
60	8,7	
89	6,3	



GARLANDS

26-33



Introduction

Garland conveyor systems

Characteristics and advantages

Garland systems are generally used in transporting larger materials using high load capacity belts, since the hanging system allows for greater belt transportation volume and speed.

The articulation of the garlands allows them to adapt to the shape of the material, reducing impacts against the belt and rollers, which facilitates transportation and considerably increases the life of the rollers. The main advantage in using this system is that the garland can oscillate lengthwise (in the direction of the material being transported), and transversely, absorbing stress and reducing wear on the belt and rollers.

Main advantages garland systems have over fixed supports:

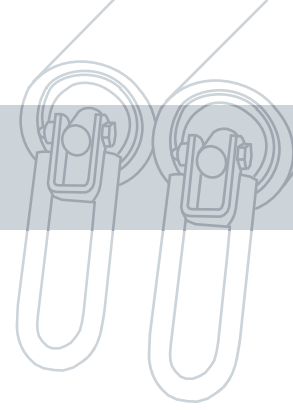
- Better dynamic absorption of stresses.
- Best positioning of the load in the centre of the belt.
- Higher carrying capacity.
- Higher speeds.
- Reduced structural weight.
- Improved belt alignment.

Roller arrangement

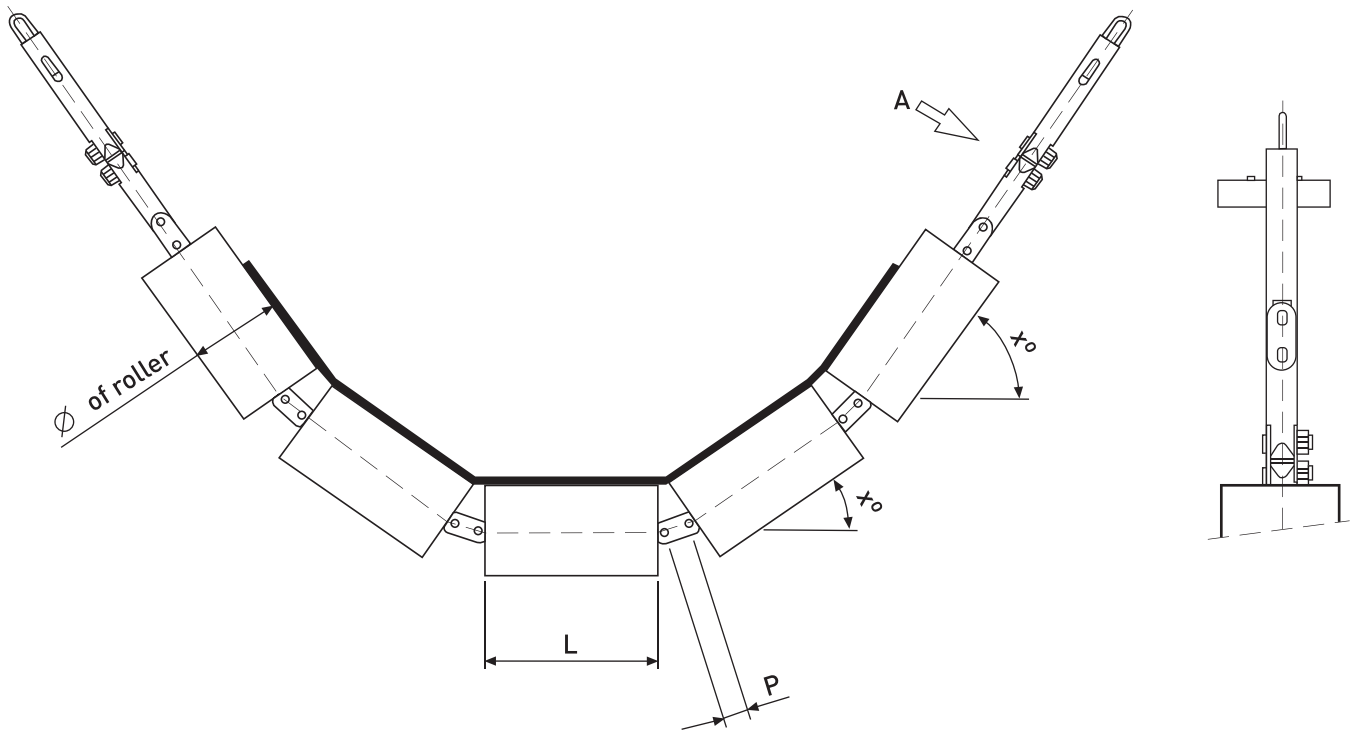
The garland is composed of a series of carrying rollers, connected together by chain links. The most common arrangements are:

- 2 metallic or rubber rings rollers on return side.
- 3 metallic rollers on carry side.
- 5 metallic rollers or impact rubber rings rollers at the loading stations.

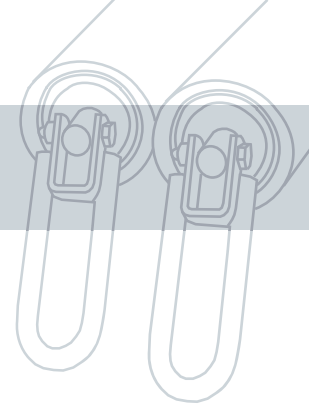




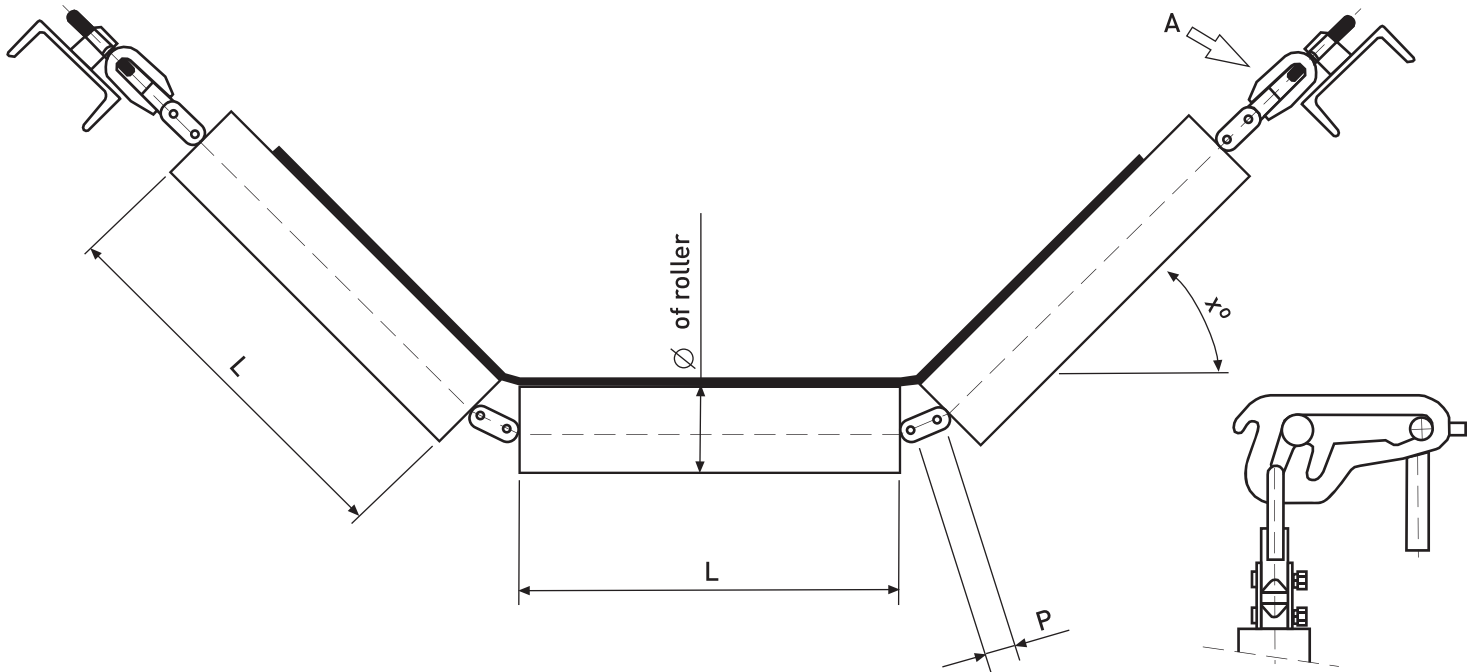
LOADING GARLAND WITH 5 ROLLERS



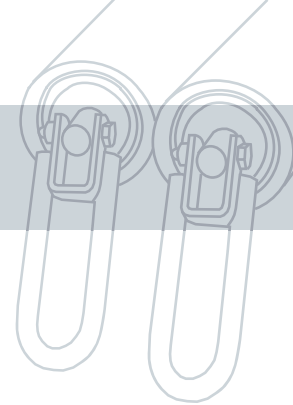
Belt Width	Ø of roller	L	Shaft	Bearing	Pitch	x°
1200	159-177,8-193,7	250	40	6308	50,8	35°, 60°
		250	50	6310	57,15	35°, 60°
		250	60	6312	57,15	35°, 60°
1400	159-177,8-193,7	290	40	6308	50,8	35°, 60°
		290	50	6310	57,15	35°, 60°
		290	60	6312	57,15	35°, 60°
1600	159-177,8-193,7	340	40	6308	50,8	35°, 60°
		340	50	6310	57,15	35°, 60°
		340	60	6312	57,15	35°, 60°
1800	159-177,8-193,7	380	40	6308	50,8	35°, 60°
		380	50	6310	57,15	35°, 60°
		380	60	6312	57,15	35°, 60°
2000	159-177,8-193,7	420	40	6308	50,8	35°, 60°
		420	50	6310	57,15	35°, 60°
		420	60	6312	57,15	35°, 60°
2200	159-177,8-193,7	460	40	6308	50,8	35°, 60°
		460	50	6310	57,15	35°, 60°
		460	60	6312	57,15	35°, 60°
2400	159-177,8-193,7	500	40	6308	50,8	35°, 60°
		500	50	6310	57,15	35°, 60°
		500	60	6312	57,15	35°, 60°



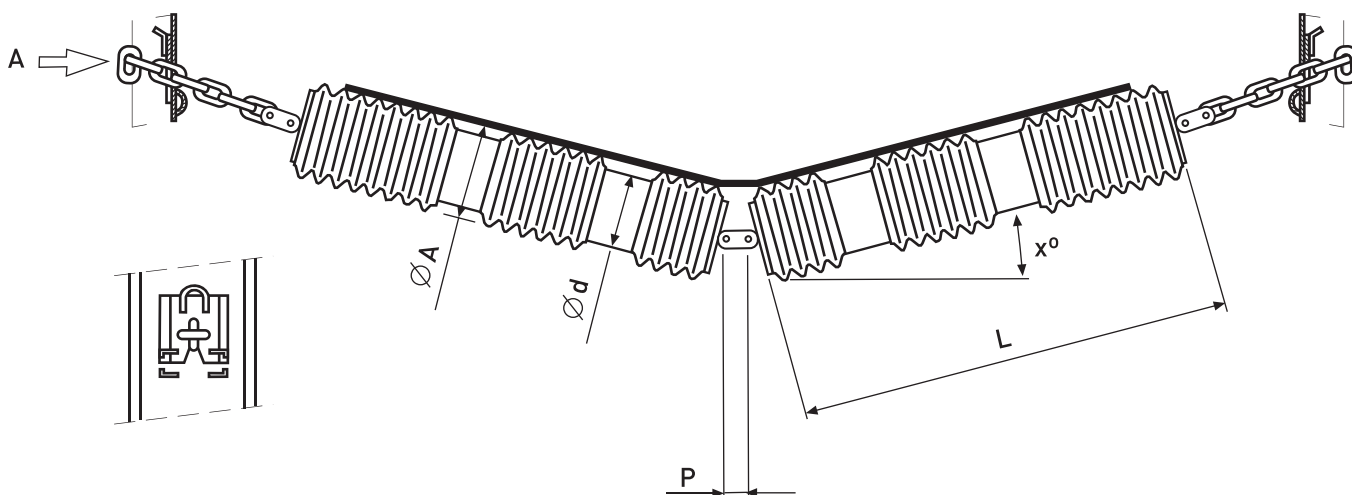
CARRY GARLAND WITH 3 ROLLERS



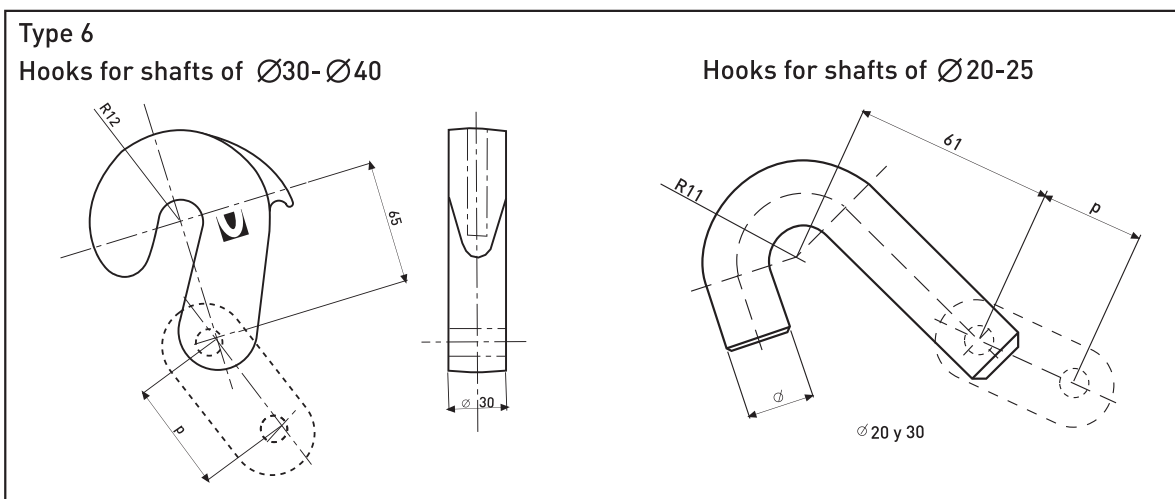
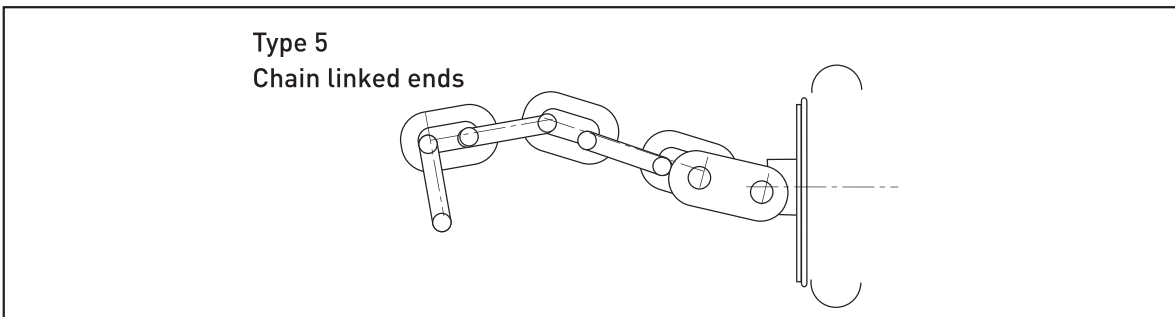
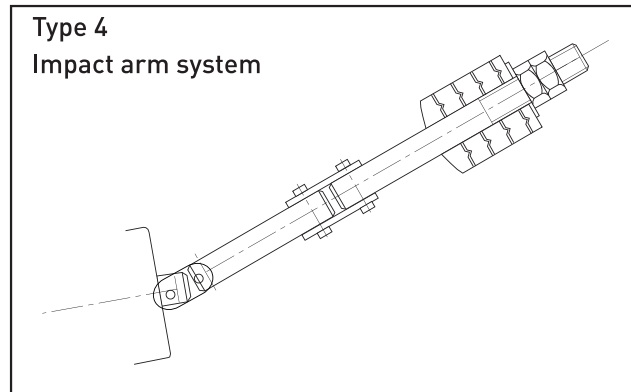
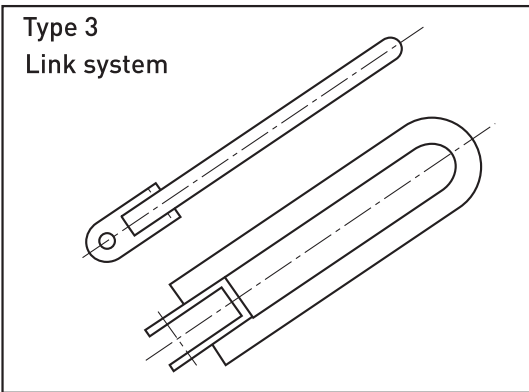
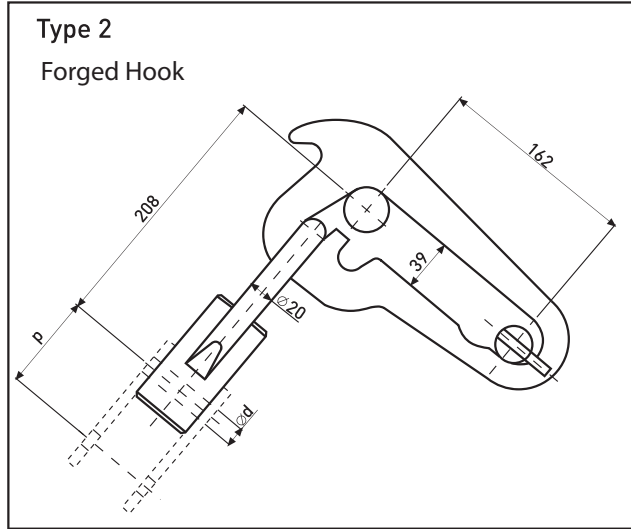
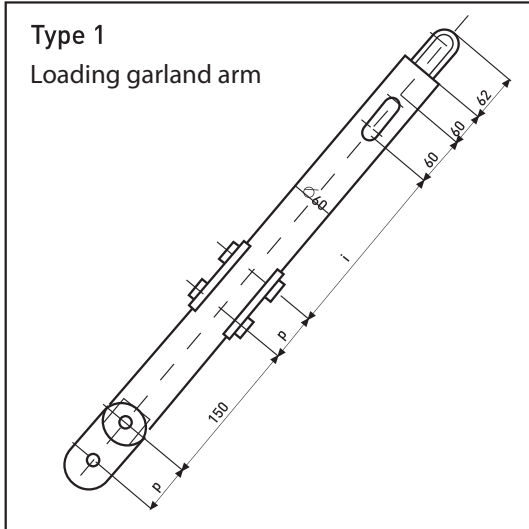
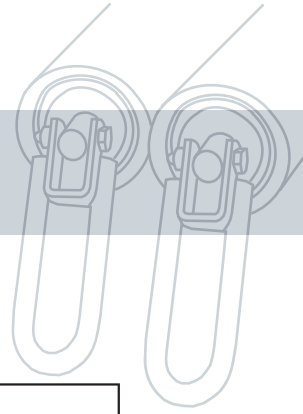
Belt width	Ø of roller	L	Shaft	Bearing	Pitch	x°
500	89-108-133	200	20	6204	25,4	25°-45°
	89-108-133-159	200	25	6205	31,75	25°-45°
		200	25	6305	31,75	25°-45°
650	89-108-133	250	20	6204	25,4	25°-45°
	89-108-133-159	250	25	6205	31,75	25°-45°
		250	25	6305	31,75	25°-45°
		250	30	6306	38,1	25°-45°
800	89-108-133	315	20	6204	25,4	25°-45°
	89-108-133-159	315	25	6205	31,75	25°-45°
		315	25	6305	31,75	25°-45°
		315	30	6306	38,1	25°-45°
1000	89-108-133	380	20	6204	25,4	25°-45°
	89-108-133-159	380	25	6205	31,75	25°-45°
		380	25	6305	31,75	25°-45°
		380	30	6306	38,1	25°-45°
1200	89-108-133	465	20	6204	25,4	25°-45°
	89-108-133-159	465	25	6205	31,75	25°-45°
		465	25	6305	31,75	25°-45°
		465	30	6306	38,1	25°-45°
	108-159	465	40	6308	50,8	25°-45°
1400	89-108-133	530	20	6204	25,4	25°-45°
	89-108-133-159	530	25	6205	31,75	25°-45°
		530	25	6305	31,75	25°-45°
		530	30	6306	38,1	25°-45°
	108-159-193,7	530	40	6308	50,8	25°-45°
1600	89-108-133-159	600	25	6205	31,75	25°-45°
		600	25	6305	31,75	25°-45°
		600	30	6306	38,1	25°-45°
	108-159-193,7	600	40	6308	50,8	25°-45°
1800	108-159-193,7	670	30	6306	38,1	25°-45°
	159-193,7	670	40	6308	50,8	25°-45°
		670	50	6310	50,8	25°-45°
2000	108-159-193,7	750	40	6308	50,8	25°-45°
	159-193,7	750	50	6310	50,8	25°-45°
		750	60	6312	57,15	25°-45°
2200	108-159-193,7	800	40	6308	50,8	25°-45°
	159-193,7	800	50	6310	50,8	25°-45°
		800	60	6312	57,15	25°-45°

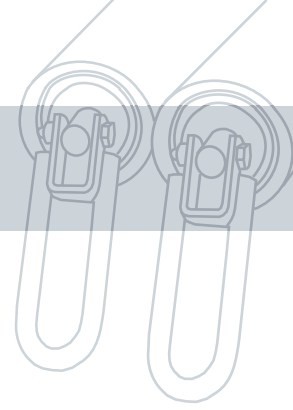


RETURN GARLAND WITH 2 ROLLERS

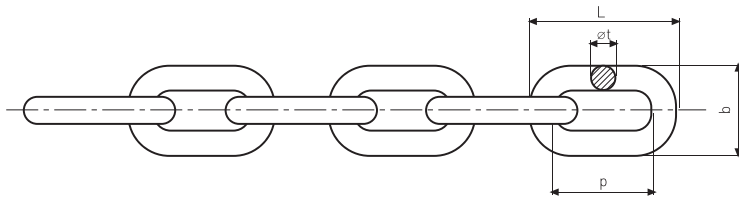


Belt width	Ø of roller	L	Shaft	Bearing	Pitch	x°
500	89-108-133	315	20	6204	25,4	10°
	89-108-133-159	315	25	6205	31,75	10°
		315	25	6305	31,75	10°
650	89-108-133	380	20	6204	25,4	10°
		380	25	6205	31,75	10°
	89-108-133-159	380	25	6305	31,75	10°
		380	30	6306	38,1	10°
800	89-108-133	465	20	6204	25,4	10°
		465	25	6205	31,75	10°
	89-108-133-159	465	25	6305	31,75	10°
		465	30	6306	38,1	10°
1000	89-108-133	600	20	6204	25,4	10°
		600	25	6205	31,75	10°
	89-108-133-159	600	25	6305	31,75	10°
		600	30	6306	38,1	10°
1200	89-108-133	700	20	6204	25,4	10°
		700	25	6205	31,75	10°
	89-108-133-159	700	25	6305	31,75	10°
		700	30	6306	38,1	10°
	108-159	700	40	6308	50,8	10°
1400	89-108-133	800	20	6204	25,4	10°
		800	25	6205	31,75	10°
	89-108-133-159	800	25	6305	31,75	10°
		800	30	6306	38,1	10°
	108-159-193,7	800	40	6308	50,8	10°
1600	89-108-133-159	900	25	6205	31,75	10°
		900	25	6305	31,75	10°
	108-159-193,7	900	30	6306	38,1	10°
		900	40	6308	50,8	10°
1800	108-133-159	1000	25	6205	31,75	10°
		1000	25	6305	31,75	10°
	108-159-193,7	1000	40	6306	38,1	10°
		1000	50	6308	50,8	10°
	159-193,7	1000	60	6310	50,8	10°
2000	133-159	1100	25	6205	31,75	10°
		1100	25	6305	31,75	10°
	108-159-193,7	1100	40	6308	50,8	10°
		1100	50	6310	50,8	10°
	159-193,7	1100	60	6312	57,15	10°
2200	133-159	1250	30	6306	38,1	10°
	108-159-193,7	1250	40	6308	50,8	10°
		1250	50	6310	50,8	10°
	159-193,7	1250	60	6312	57,15	10°



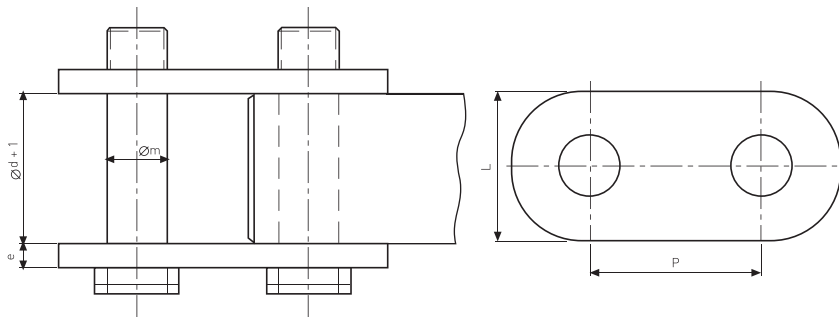


CHAIN ACCORDING TO DIN 764



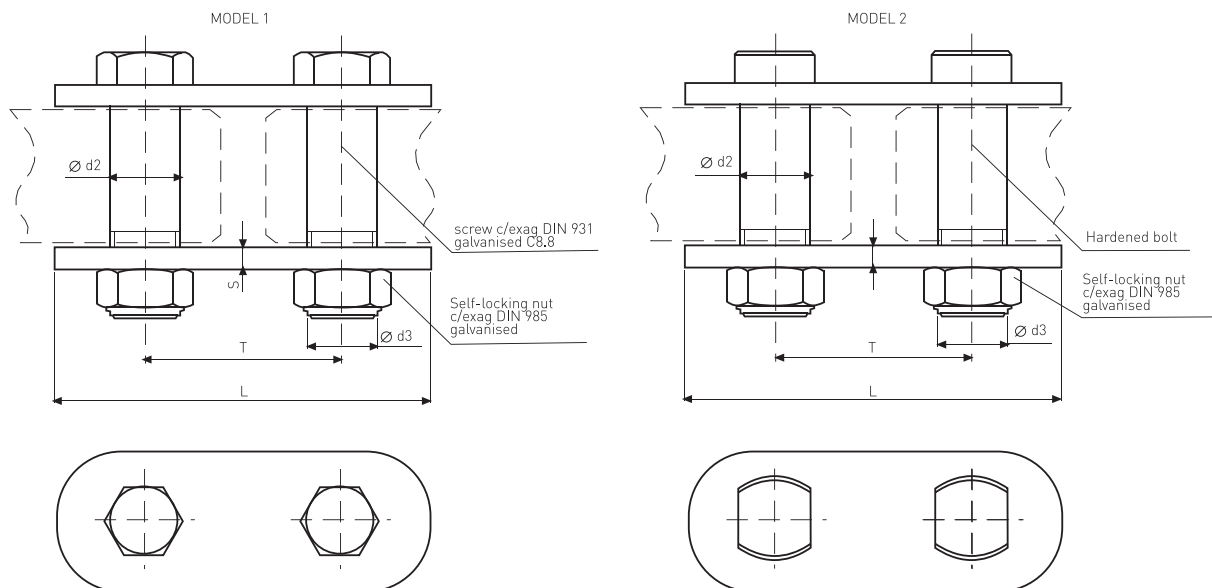
Ø axle	20	25	30	40	50	60
t	10	13	13	16	16	16
p	35	45	45	56	56	56
b	34	44	44	54	54	54
L	55	71	71	88	88	88

LINKS

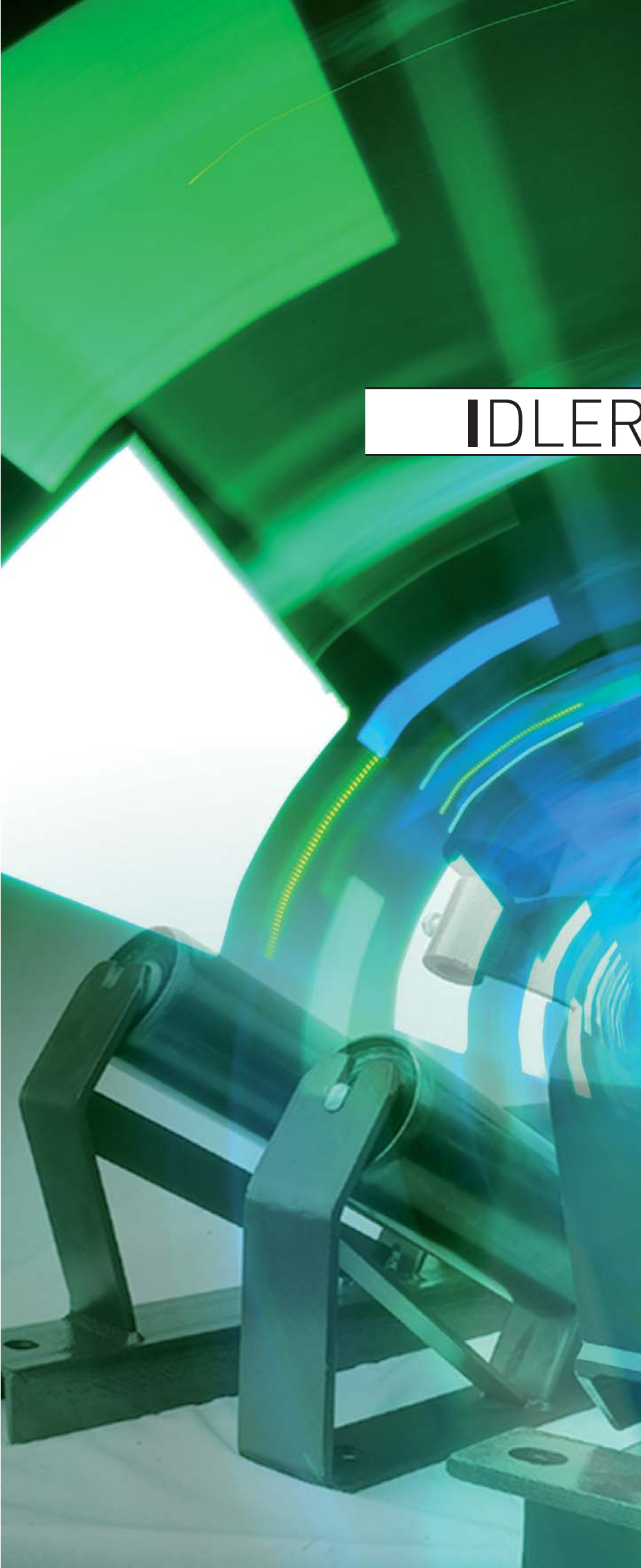


Ø axle	20	25	30	40	50	60
p	25,4	31,75	38,1	50,8	57,15	57,15
m	10	10	12	15/16	20/25	20/25
e	5	5	5	6/8	8/14	8/14
L	26	30	30	40	50/60	50/60

LINKS & BOLTS



DIMENSIONS								
Ø Axle	for bearing	Ø d2 (mm)	for hole	Ø d3 (mm)	T (mm)	L max (mm)	s(mm)	MODEL
25	6305	9,8	10,3	M-10	31,75	62	5	MODEL 1
30	6306	11,8	12	M-12	38,1	68	5	MODEL 1
40	6308	14,5	15	M-12	50,8	93	6	MODEL 2
40	6310	14,5	15	M-12	50,8	93	6	MODEL 2
		20	20,5	M-20	57,15	109	8	MODEL 2
50	6312	20	20,5	M-20	57,15	109	8	MODEL 2
40								
50								
		25	25,5	M-20	57,15	117	15	MODEL 2



IDLER FRAMES

34-40



Introduction

Roller Idler Frames

Idler frames are metal structures which support and help align the rollers.

IDLER FRAME SELECTION

Idler frame selection is based on belt width and roller arrangement in relation to the load capacity of the conveyor.

Based on the type of load and speed requirements, the MEDIUM or HEAVY model is chosen, both of which are manufactured with S 235 JR structural quality.

SHAPE AND DIMENSIONS

Idler frames are designed according to DIN 22107, ISO 1537 and CEMA standards, taking into account the requirements and needs of the customer.

There are three main groups:

- Upper carrying
- Bottom / Return
- Self-aligning

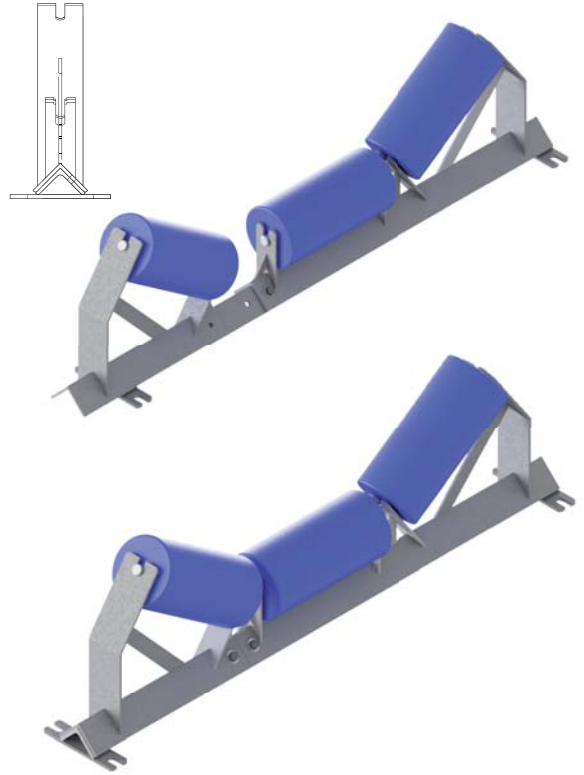
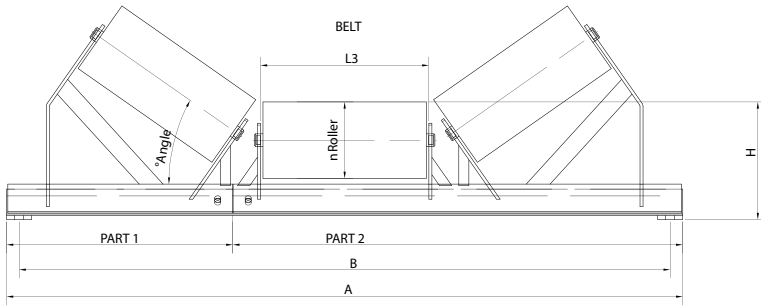
Idler frames are designed so they will not accumulate debris or pollutants in order to avoid corrosion. This also prevents debris and pollutants from coming into contact with the rollers, thus avoiding corrosion due to friction with the conveyor belt. Energy consumption is then reduced while running the conveyor belt.

PROTECTIVE COATINGS

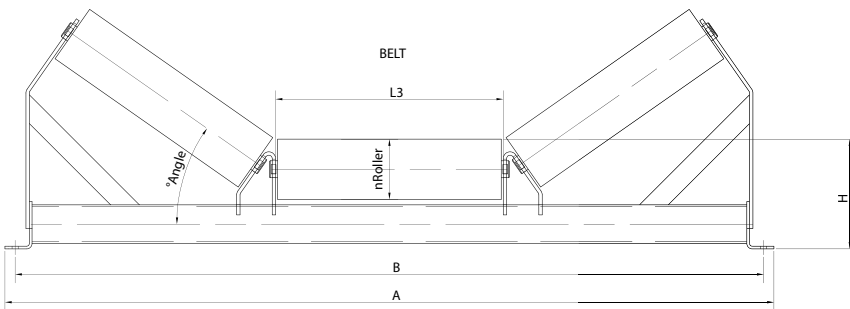
Idler frames are coated with a rust-proof primer and the following coatings can be custom ordered:

- Hot Dip Galvanized
- Zinc plated
- Painted

CARRY RETRACTABLE

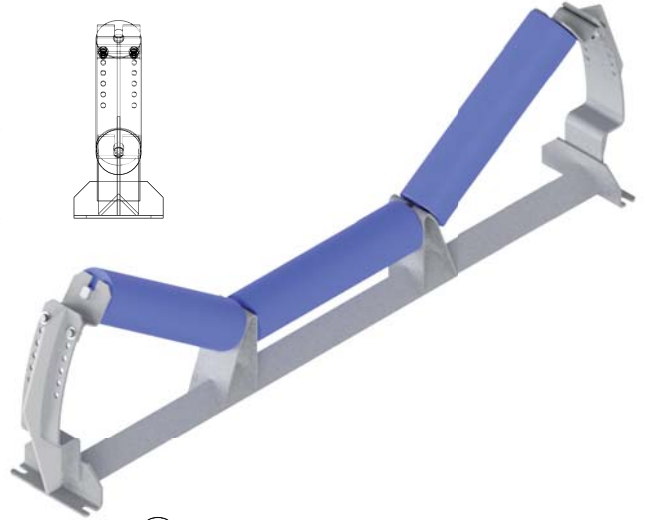
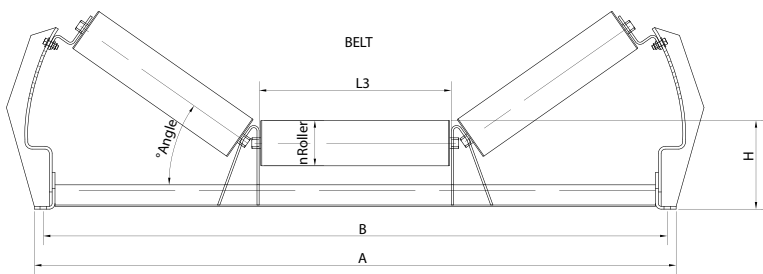


CARRY

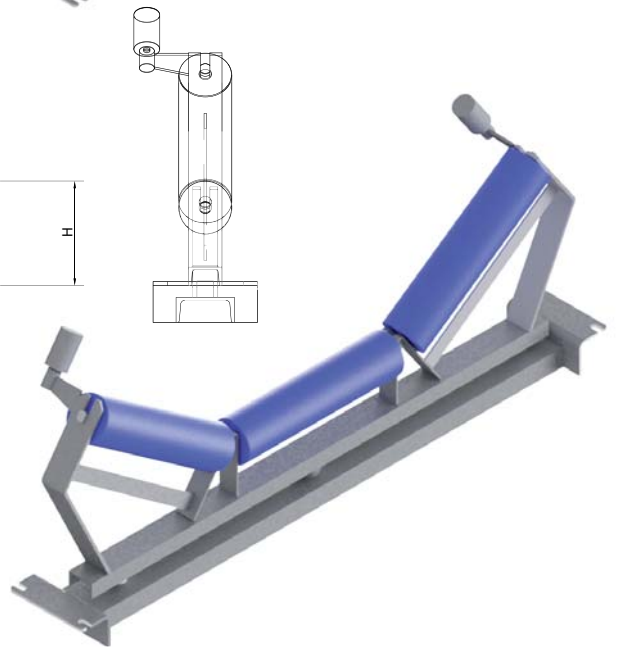
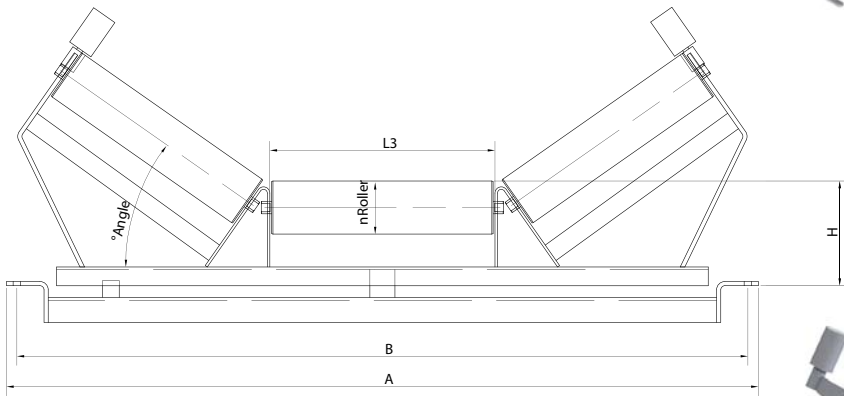


- OPTIMIZED DESIGN:
- High strength
- Lower weight
- Round slope to prevent material accumulation

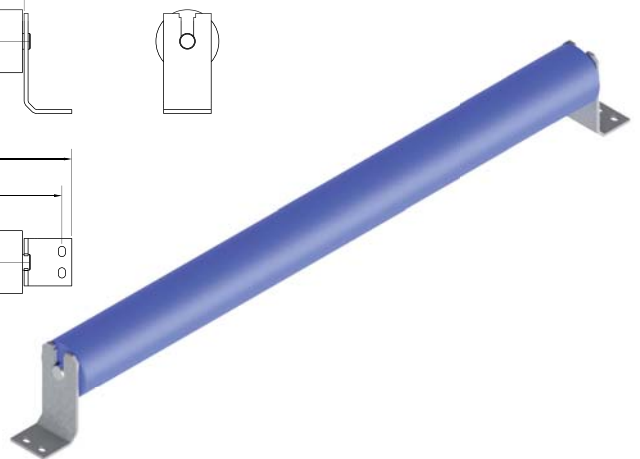
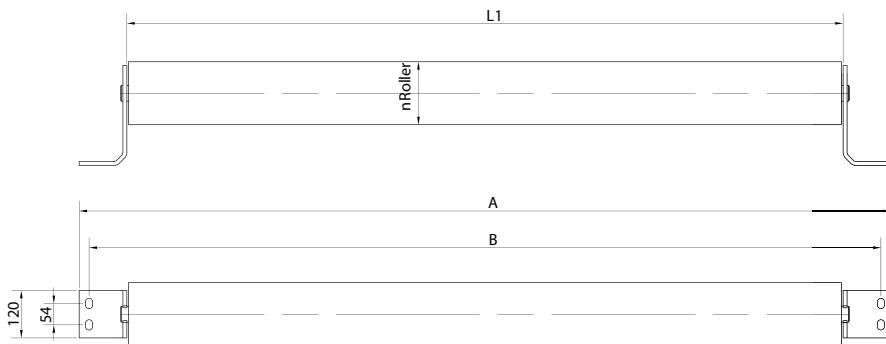
CARRY TRANSITION



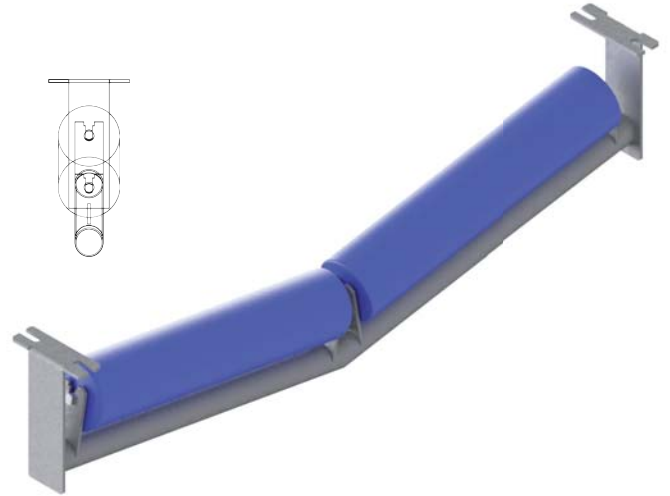
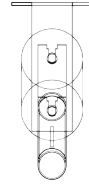
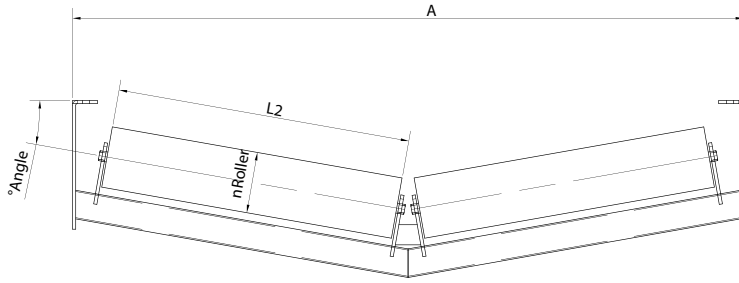
CARRY SELF-ALIGNER



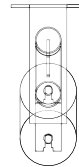
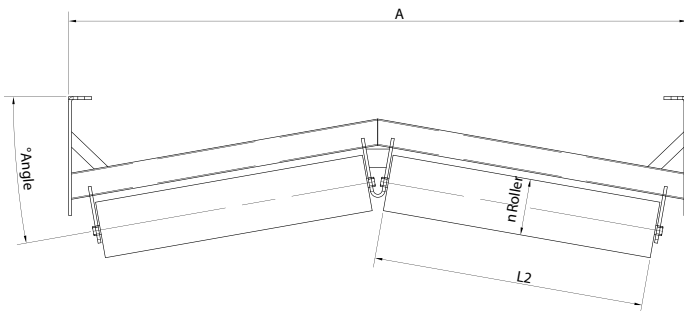
FLAT CARRIER



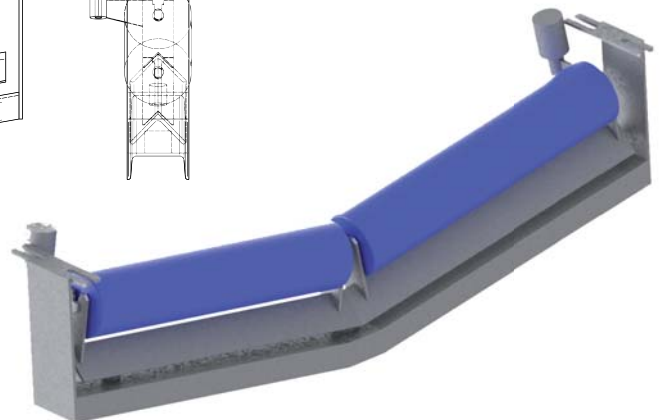
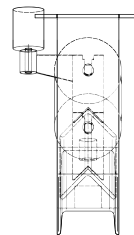
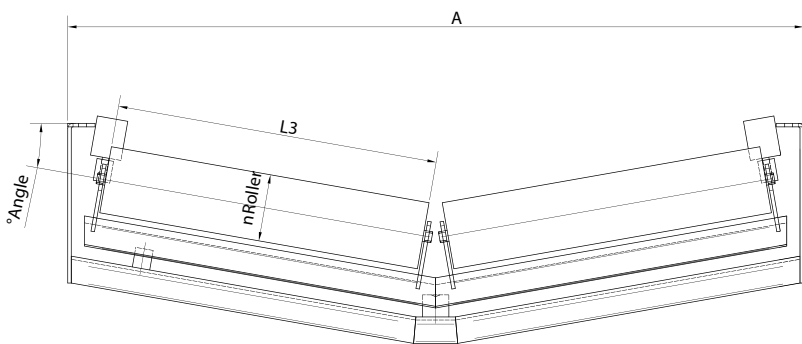
V RETURN



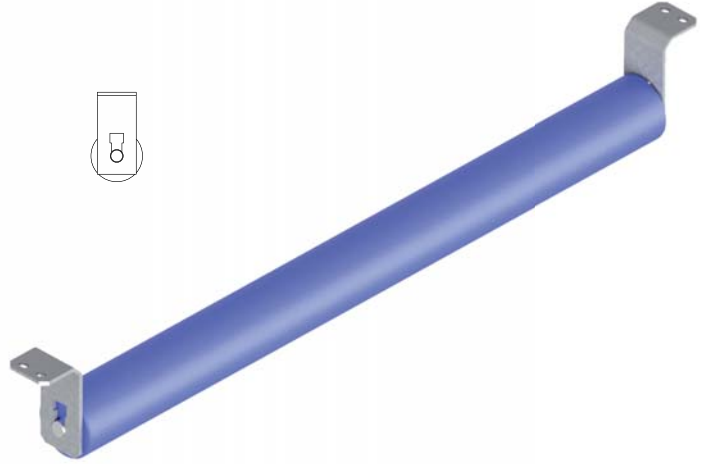
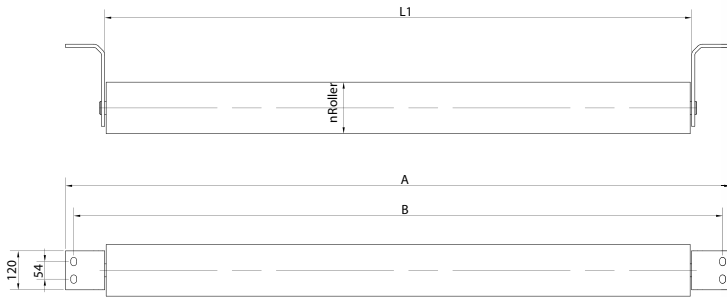
V RETURN INVERTED



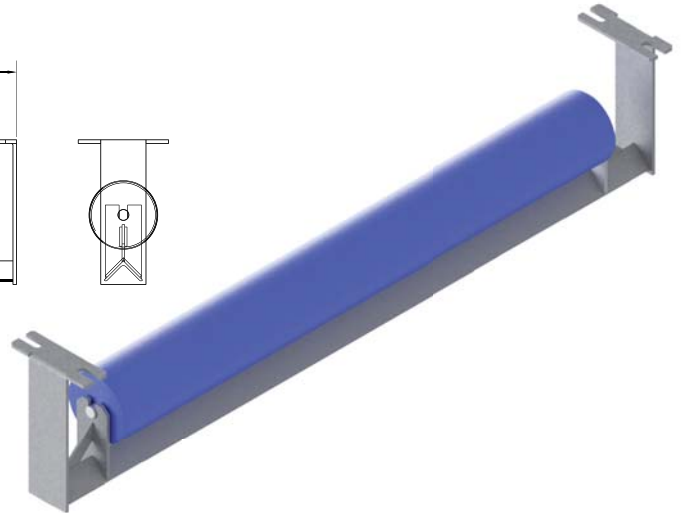
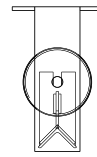
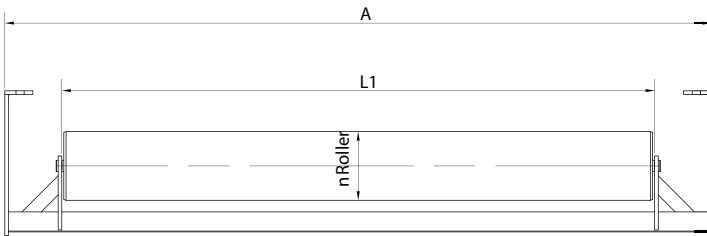
VE RETURN SELF-ALIGNER



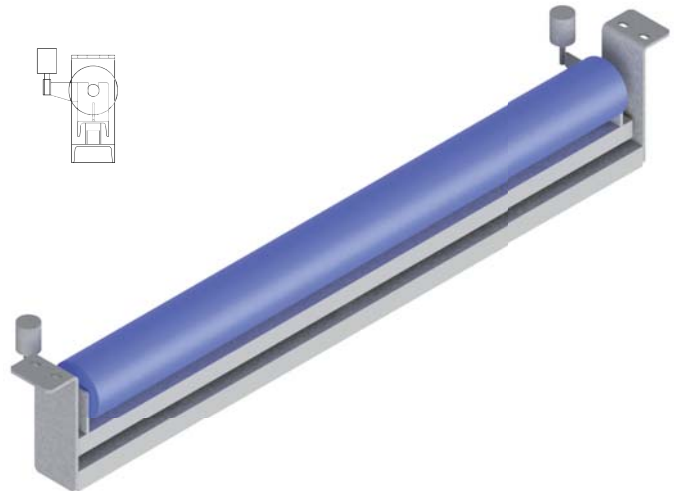
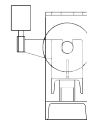
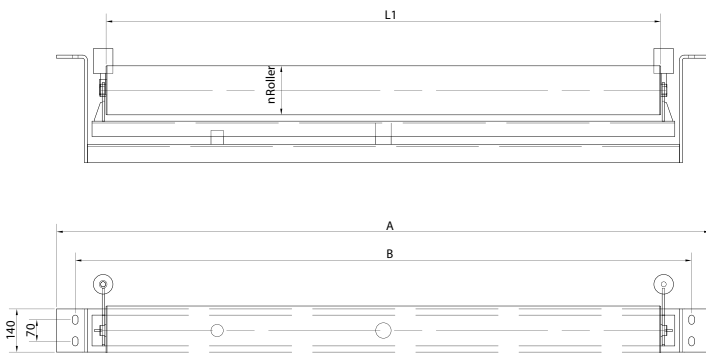
FLAT RETURN WITH BRACELETS



FLAT RETURN



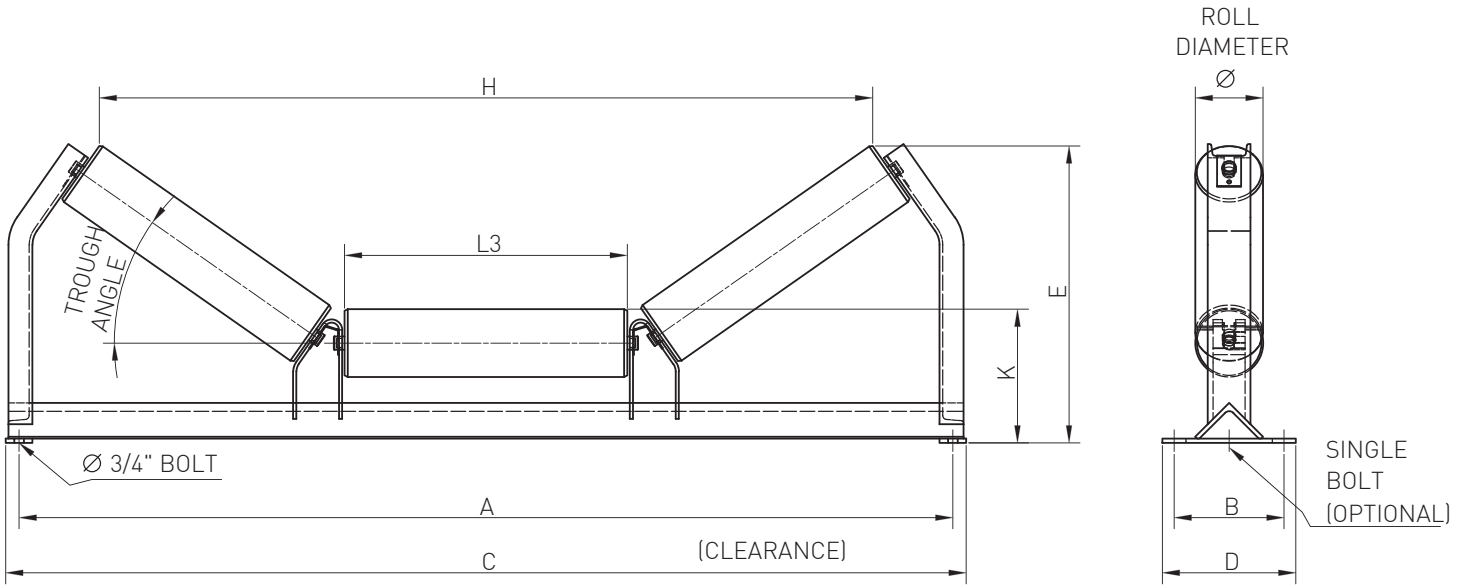
FLAT SELF-ALIGNER RETURN



DESIGN ACCORDING TO DIN22107 / ISO 1537 STANDARDS							
Belt	A	B	Ø Roller	H	L1	L2	L3
400	700	650	63,5	62	500	250	160
			89	75			
			108	85			
500	800	750	63,5	62	600	315	200
			89	75			
			108	85			
			133	100			
650	950	900	63,5	62	750	380	250
			89	75			
			108	85			
			133	100			
800	1150	1100	89	75	950	465	315
			108	85			
			133	100			
1000	1350	1300	89	75	1150	600	380
			108	85			
			133	100			
			159	130			
1200	1600	1550	108	85	1400	700	465
			133	100			
			159	130			
1400	1800	1750	133	100	1600	800	530
			159	130			
1600	2050	2000	133	100	1800	900	600
			159	130			
1800	2250	2200	133	100	2000	1000	670
			159	130			
			194	160			
2000	2500	2450	159	130	2200	1100	750
			194	160			
2200	2700	2650	159	130	2500	1250	800
			194	160			
2400	2950	2900	159	130	2800	1400	900
			194	160			
2600	3150	3100	159	130	3000	1500	950
			194	160			
2800	3400	3350	159	130	3150	1600	1050
			194	160			
			219	180			
3000	3600	3550	159	130	3350	1700	1120
			194	160			
			219	180			

*L1: length of the roller in a one roller idler frame.
 L2: length of the roller in a two roller idler frame.
 L3: length of the roller in a three roller idler frame.

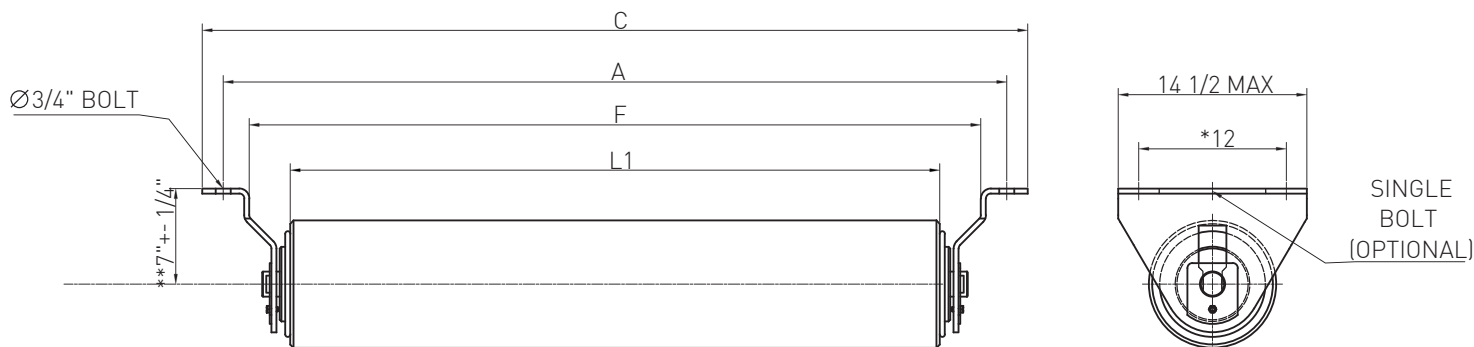
LOAD CAPACITIES ACCORDING TO CEMA (Kg)						
Type of roller	Belt width (Inches)	Trough angle			Lower flat	Lower in V
		20°	35°	45°		
CEMA B	18	112	125	131	100	
	24	112	125	131	87	
	30	112	125	131	75	
	36	112	125	126	71	
	42	107	109	112	64	
	48	104	107	110	57	
Calculations are based on Min L10 for 30.000 hrs at 500 rpm.						
CEMA C	18	246	270	287	216	
	24	246	270	287	148	
	30	246	270	287	114	182
	36	246	251	258	91	182
	42	232	237	243	69	182
	48	218	224	229	57	182
	54	205	210	215	*	182
	60	191	195	201	*	182
	66				*	182
Calculations are based on Min L10 for 30.000 hrs at 500 rpm. [*] Use CEMA D						
CEMA D	24	327	360	382	273	
	30	327	360	382	273	
	36	327	360	382	273	309
	42	327	360	382	227	309
	48	327	360	382	193	309
	54	327	335	343	171	309
	60	314	321	329	127	309
	66				98	309
	72	314	294	301	71	309
	78				57	309
Calculations are based on Min L10 for 60.000 hrs at 500 rpm.						
CEMA E	36	491	540	572	453	472
	42	491	540	572	453	472
	48	491	540	572	453	472
	54	491	540	572	420	472
	60	491	540	572	386	472
	66				352	472
	72	491	540	572	318	472
	78				284	472
	84	456	502	515	250	472
	90				216	472
	96	477	488	501	182	472
	102				114	472
Calculations are based on Min L10 para 60.000 hrs a 500 rpm.						
CEMA F	60		898	953	681	**
	72		898	953	545	**
	84		898	953	409	**
	96		839	890	273	**
Calculations are based on Min L10 for 60.000 hrs at 500 rpm.(**) Use CEMA E						



DESIGN ACCORDING TO CEMA F																						
BELT WIDTH		C WIDTH		A STANDARD		A WIDE		TROUGH ANGLE	E Max						H Max							
									Ø 6		Ø 7		Ø 8		Ø 6		Ø 7		Ø 8			
inches	mm	inches	mm	inches	mm	inches	mm		inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm		
60	1524	71	1803,4	69	1752,6	77	1955,8	20	21 1/2	546,1	22	588,8	22 1/2	571,5	99	2514,6	99	2514,6	99	2514,6	99	2514,6
								35	28	711,2	29	736,6	29	736,6	60	1524,0	60	1524,0	60	1524,0	60	1524,0
								45	28 1/2	723,9	29 1/2	749,3	29 1/2	749,3	55	1397,0	55	1397,0	55	1397,0	55	1397,0
72	1828,8	83	2108,2	81	2057,4	89	2260,6	20	22 1/2	571,5	23 1/2	596,9	23 1/2	596,9	78	1981,2	78	1981,2	78	1981,2	78	1981,2
								35	19 1/2	495,3	30 1/2	774,7	30 1/2	774,7	71	1803,4	71	1803,4	71	1803,4	71	1803,4
								45	31 1/2	800,1	32 1/2	825,5	32 1/2	825,5	65	1651,0	65	1651,0	65	1651,0	65	1651,0
84	2133,6	95	2413	93	2362,2	101	2565,4	20	24 1/2	622,3	25 1/2	647,7	25 1/2	647,7	90	2286,0	90	2286,0	90	2286,0	90	2286,0
								35	31 1/2	800,1	32 1/2	825,5	32 1/2	825,5	82	2082,8	82	2082,8	82	2082,8	82	2082,8
								45	34 1/2	876,3	35 1/2	901,7	35 1/2	901,7	75	1905,0	75	1905,0	75	1905,0	75	1905,0
96	2438,4	107	2717,8	105	2667	113	2870,2	20	26 1/2	673,1	37 1/2	952,5	27 1/2	698,5	102	2590,8	102	2590,8	102	2590,8	102	2590,8
								35	33 1/2	850,9	34 1/2	876,3	34 1/2	876,3	93	2362,2	93	2362,2	93	2362,2		
								45	37 1/2	952,5	38 1/2	977,9	38 1/2	977,9	85	2159,0	85	2159,0	85	2159,0		

BELT WIDTH	K ± 1/4						L3		B		Dmax	
	Ø 6		Ø 7		Ø 8							
inches	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
60	11 3/4	298,45	12 1/4	311,15	12,75	323,85	22	558,8	12	304,8	15	381
72	12	304,8	12 1/2	317,5	13	330,2	26,25	666,8	12	304,8	15	381
84	12 1/4	311,15	12 3/4	323,85	13 1/4	336,6	30,5	774,7	12	304,8	15	381
96	12 1/4	311,15	12 3/4	323,85	13 1/4	336,6	34,75	882,7	12	304,8	15	381

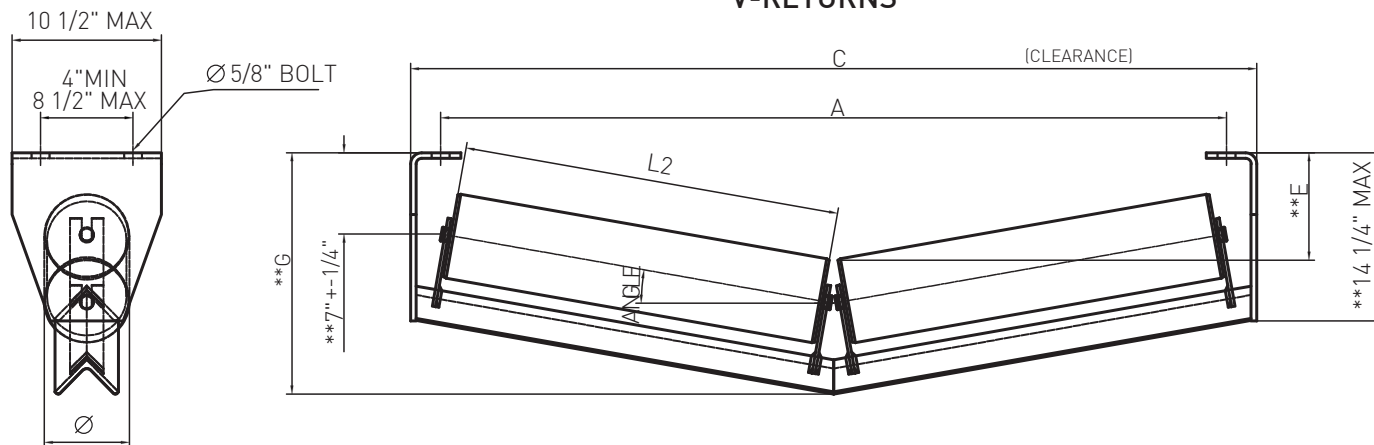
FLAT RETURNS (6", 7" AND 8" DIAMETERS)

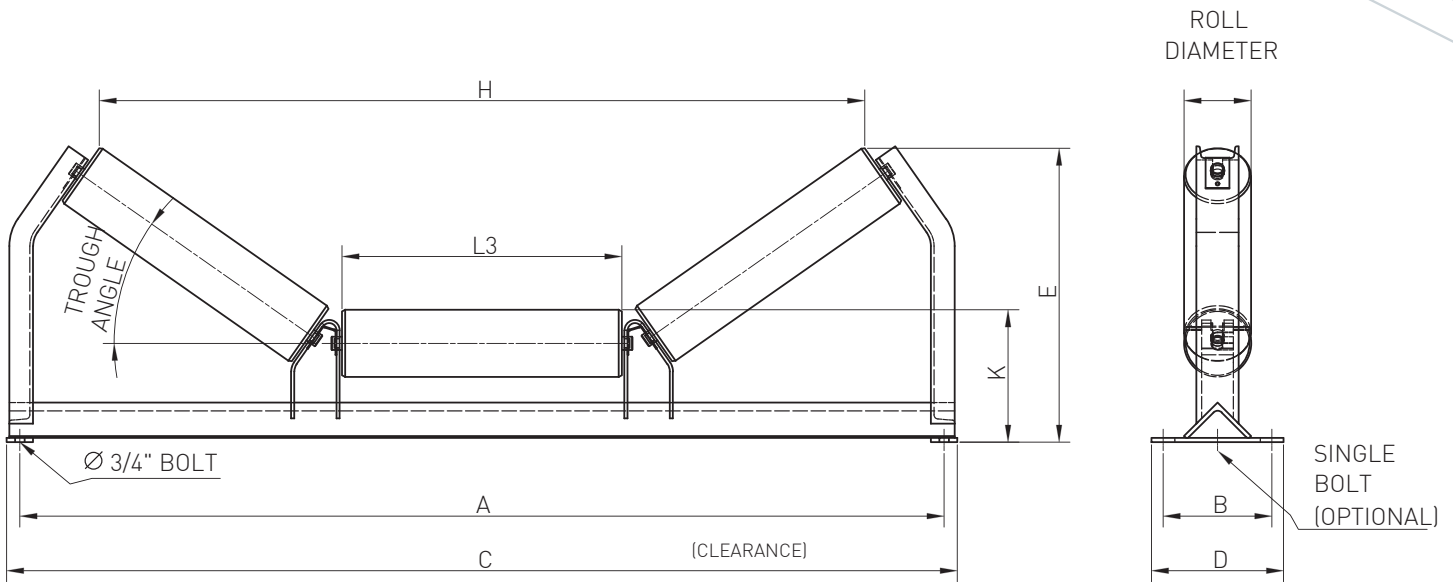


For wide base returns, use next higher belt width.
 *Some differences may exist in dimensions with some manufacturers.
 **Also available with 1 1/2" drop.

BELT WIDTH	E ± 1/4								Gmax				Fmin		L1		L2		
	10°		15°		10°		15°		10°		15°								
	Ø6	Ø7	Ø6	Ø7	Ø6	Ø7	Ø6	Ø7	Ø6	Ø7	Ø6	Ø7	inches	mm	inches	mm	inches	mm	
60	1524	9 5/8	244,5	9 1/8	231,8	12 1/8	308,0	11 5/8	295,3	20 1/4	514,4	23 1/2	596,9	65	1651	63,56	1614,4	31,56	801,6
72	1828,8	10 5/8	269,9	10 1/8	257,2	13 5/8	346,1	13 1/8	333,4	22	558,8	25 3/4	654,1	77	1955,8	75,56	1919,2	37,56	954,0
84	2133,6	11 5/8	295,3	11 1/8	282,6	15 1/4	387,4	14 3/4	374,7	23 1/8	587,4	27 1/4	692,2	89	2260,6	87,56	2224,0	43,88	1114,6
96	2438,4	12 5/8	320,7	12 1/8	308,0	16 7/8	428,6	16 3/8	415,9	24 3/4	628,7	28 7/8	733,4	101	2565,4	99,56	2528,8	49,88	1267,0

V-RETURNS



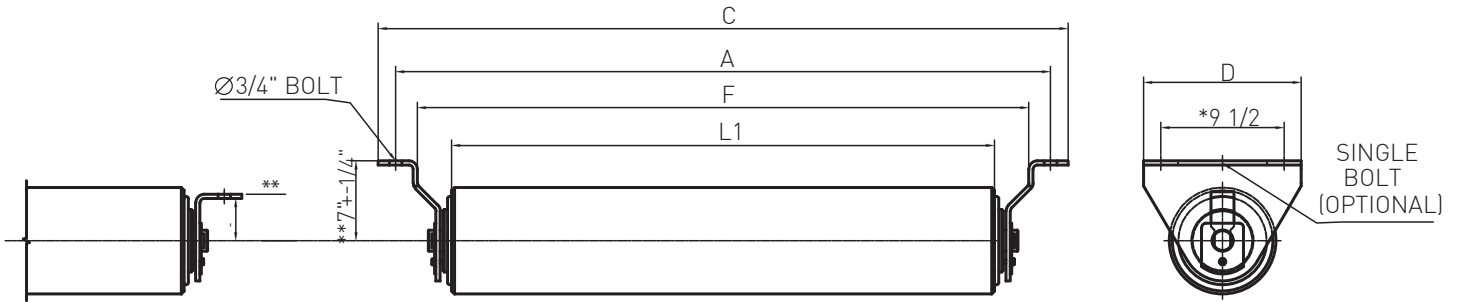


DESIGN ACCORDING TO CEMA E

BELT WIDTH		C WIDTH		A STANDARD		A WIDE		TROUGH ANGLE	E Max				H Max			
									Ø6		Ø7		Ø6		Ø7	
inches	mm	inches	mm	inches	mm	inches	mm		inches	mm	inches	mm	inches	mm	inches	mm
36	914,4	47	1193,8	45	1143	51	1295,4	20	16 1/2	419,1	17	431,8	42	1066,8	72	1828,8
								35	21	533,4	21 1/2	546,1	38	965,2	38	965,2
								45	21 1/2	546,1	22	558,8	35	889,0	35	889,0
42	1066,8	53	1346,2	51	1295,4	57	1447,8	20	17 1/2	444,5	18	457,2	48	1219,2	48	1219,2
								35	22 1/2	571,5	23	584,2	43 1/2	1104,9	43 1/2	1104,9
								45	23	584,2	23 1/2	596,9	50	1270,0	40	1016,0
48	1219,2	59	1498,6	57	1447,8	63	1600,2	20	18 1/2	469,9	19	482,6	54	1371,6	54	1371,6
								35	24	609,6	24 1/2	622,3	49	1244,6	49	1244,6
								45	24 1/2	622,3	25	635,0	45	1143,0	45	1143,0
54	1371,6	65	1651	63	1600,2	69	1752,6	20	19 1/2	495,3	20	508,0	60	1524,0	60	1524,0
								35	25 1/2	647,7	26	660,4	54 1/2	1384,3	54 1/2	1384,3
								45	26	660,4	26 1/2	673,1	50	1270,0	50	1270,0
60	1524	71	1803,4	69	1752,6	75	1905	20	20 1/2	520,7	21	533,4	66	1676,4	66	1676,4
								35	27	685,8	27 1/2	698,5	60	1524,0	60	1524,0
								45	27 1/2	698,5	28	711,2	55	1397,0	55	1397,0
72	1828,8	83	2108,2	81	2057,4	87	2209,8	20	22	558,8	22 1/2	571,5	78	1981,2	78	1981,2
								35	39	736,6	29 1/2	749,3	71	1803,4	71	1803,4
								45	31	787,4	31 1/2	800,1	65	1651,0	65	1651,0
84	2133,6	95	2413	93	2362,2	99	2514,6	20	24	609,6	24 1/2	622,3	90	2286,0	90	2286,0
								35	31	787,4	31 1/2	800,1	82	2082,8	82	2082,8
								45	24	609,6	24 1/2	622,3	90	2286,0	90	2286,0
96	2438,4	107	2717,8	105	2667	111	2819,4	20	26	660,4	26 1/2	673,1	102	2590,8	102	2590,8
								35	33	838,2	33 1/2	850,9	93	2362,2	93	2362,2
								45	37	939,8	37 1/2	952,5	85	2159,0	85	2159,0

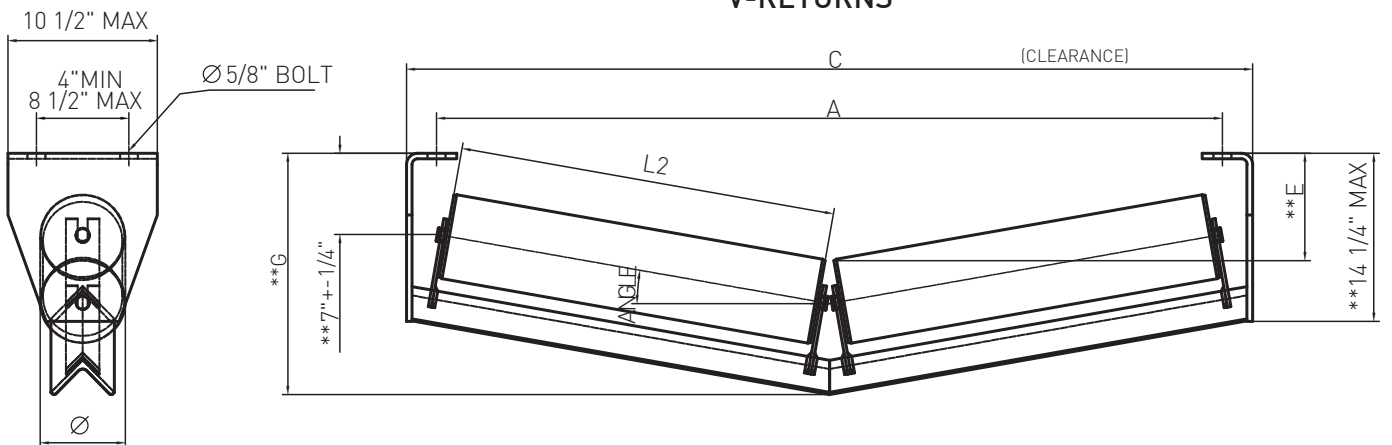
BELT WIDTH	K ± 1/4		L3		B		D			
	Ø6	Ø7	inches	mm	inches	mm	inches	mm		
36	10 3/4	273,05	11 1/4	285,75	13,56	344,4	9,5	241,3	14	355,6
42	10 3/4	273,05	11 1/4	285,75	15,56	395,2	9,5	241,3	14	355,6
48	10 3/4	273,05	11 1/4	285,75	17,56	446,0	9,5	241,3	14	355,6
54	10 3/4	273,05	11 1/4	285,75	19,62	498,3	9,5	241,3	14	355,6
60	10 3/4	273,05	11 1/4	285,75	21,38	543,1	9,5	241,3	14	355,6
72	11 1/2	292,1	12	304,8	25,25	641,4	9,5	241,3	14	355,6
84	11 3/4	298,45	12 1/4	311,15	29,25	743,0	12	304,8	16,5	419,1
96	11 3/4	298,45	12 1/4	311,15	33,25	844,6	12	304,8	16,5	419,1

FLAT RETURNS (6" AND 7" DIAMETERS)



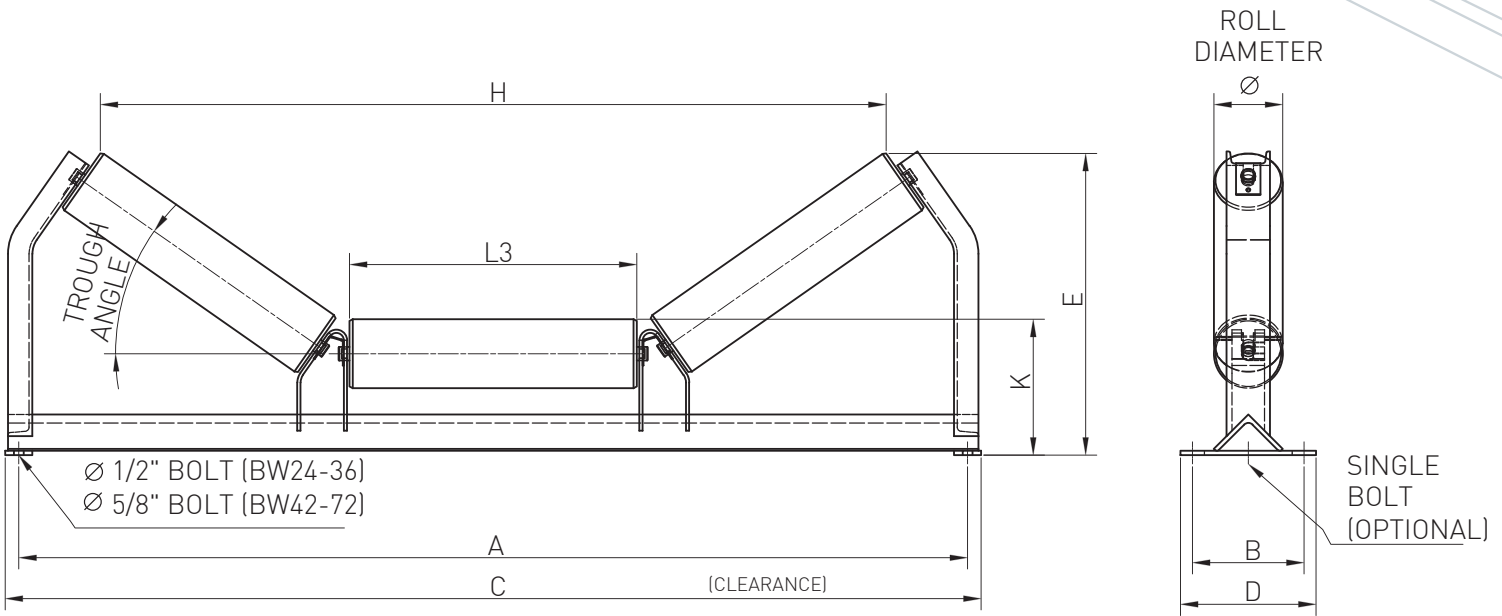
For wide base returns, use next higher belt width.
 *Some differences may exist in dimensions with some manufacturers.
 **Also available with 1 1/2" drop.

V-RETURNS



**Also available with 4 1/2" drop which decreases all vertical dimensions by 2 1/2"
 For wide base returns use next larger belt width.

BELT WIDTH		E ± 1/4								Gmax									
		10°				15°				10°		15°		Fmin		L1		L2	
inches	mm	Ø6 inches	Ø6 mm	Ø7 inches	Ø7 mm	Ø6 inches	Ø6 mm	Ø7 inches	Ø7 mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
36	914,4	7 5/8	193,7	7 1/8	181,0	9 1/8	231,8	8 5/8	219,1	18 1/4	463,6	20 1/4	514,4	41	1041,4	39,88	1013,0	19,66	499,4
42	1066,8	8 1/8	206,4	7 5/8	193,7	9 7/8	250,8	9 3/8	238,1	18 3/4	476,3	21	533,4	47	1193,8	45,88	1165,4	22,62	574,5
48	1219,2	8 5/8	219,1	8 1/8	206,4	10 5/8	269,9	10 1/8	257,2	19 1/4	489,0	21 7/8	555,6	53	1346,2	51,88	1317,8	25,56	649,2
54	1371,6	9 1/8	231,8	8 5/8	219,1	11 3/8	288,9	10 7/8	276,2	19 3/4	501,7	22 3/4	577,9	59	1498,6	57,88	1470,2	29,25	743,0
60	1524	9 5/8	244,5	9 1/8	231,8	12 1/8	308,0	11 5/8	295,3	20 1/4	514,4	23 1/2	596,9	65	1651	63,88	1622,6	31,56	801,6
72	1828,8	10 5/8	269,9	10 1/8	257,2	13 5/8	346,1	13 1/8	333,4	22	558,8	25 3/4	654,1	77	1955,8	75,88	1927,4	37,56	954,0
84	2133,6	11 5/8	295,3	11 1/8	282,6	15 1/4	387,4	14 3/4	374,7	23 1/8	587,4	27 1/4	692,2	89	2260,6	87,88	2232,2	43,88	1114,6
96	2438,4	12 5/8	320,7	12 1/8	308,0	16 7/8	428,6	16 3/8	415,9	24 3/4	628,7	28 7/8	733,4	101	2565,4	99,88	2537,0	49,88	1267,0

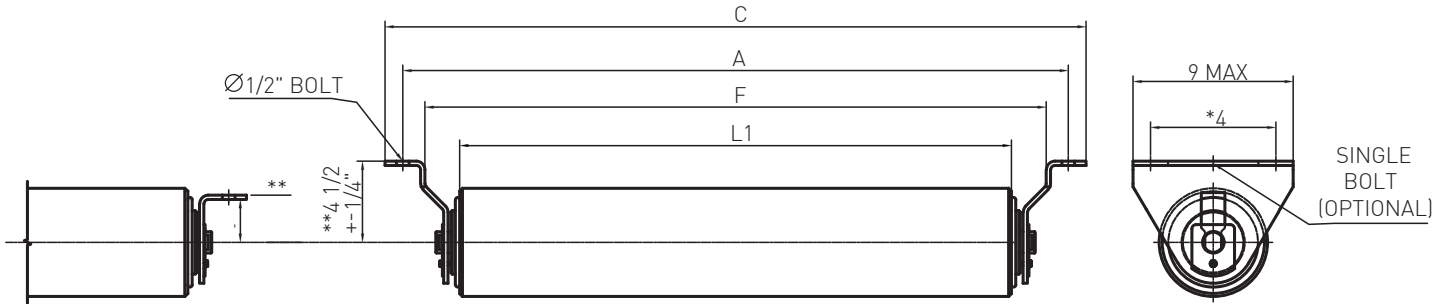


DESIGN ACCORDING TO CEMA D

BELT WIDTH	C WIDTH	A STANDARD		A WIDE		TROUGH ANGLE	E Max				H Max					
							Ø5		Ø6		Ø5		Ø6			
							inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
24	609,6	35	889	33	838,2	39	990,6	20	12	304,8	12 3/4	323,9	28 1/2	723,9	27 1/2	698,5
								35	14 1/4	362,0	14 3/4	374,7	26 1/2	673,1	25	635,0
								45	15 1/2	393,7	15 3/4	400,1	24	609,6	22 1/2	571,5
30	762	41	1041,4	39	990,6	45	1143	20	12 3/4	323,9	13 1/2	342,9	34 1/2	876,3	33 1/2	850,9
								35	15 1/2	393,7	16	406,4	32	812,8	30 1/2	774,7
								45	17 1/4	438,2	17 1/2	444,5	29	736,6	27 1/2	698,5
36	914,4	47	1193,8	45	1143	51	1295,4	20	13 1/2	342,2	14 1/4	362,0	40 1/2	1028,7	39 1/2	1003,3
								35	16 3/4	425,5	17 1/4	438,2	37 1/2	952,5	36	914,4
								45	19	482,6	19 1/4	489,0	34	863,6	32 1/2	825,5
42	1066,8	53	1346,2	51	1295,4	57	1447,8	20	14 1/2	368,3	15 1/4	387,4	46 1/2	1181,1	45 1/2	1155,7
								35	18 1/4	463,6	18 3/4	476,3	43	1092,2	41 1/2	1054,1
								45	20 1/2	520,7	20 3/4	527,1	39	990,6	37 1/2	952,5
48	1219,2	59	1498,6	57	1447,8	63	1600,2	20	15 1/2	393,7	16 1/4	412,8	54 1/2	1384,3	51 1/2	1308,1
								35	19 3/4	501,7	20	508,0	48 1/2	1231,9	47	1193,8
								45	22	558,8	22 1/2	571,5	44	1117,6	42 1/2	1079,5
54	1371,6	65	1651	63	1600,2	69	1752,6	20	16 1/2	419,1	17 1/4	438,2	58 1/2	1485,9	57 1/2	1460,5
								35	21	533,4	21 1/4	539,8	54	1371,6	52 1/2	1333,5
								45	23 1/2	596,9	23 3/4	603,3	49	1244,6	47 1/2	1206,5
60	1524	71	1803,4	69	1752,4	75	1905	20	18 1/2	469,9	19 1/4	489,0	64 1/2	1638,3	63 1/2	1612,9
								35	22 1/4	565,2	22 1/2	571,5	59 1/2	1511,3	58	1473,2
								45	25	635,0	25 1/4	641,4	54	1371,6	52 1/2	1333,5
72	1828,8	83	2108,2	81	2057,4	87	2209,8	20	20	508,0	20 1/2	520,7	76 1/2	1943,1	75 1/2	1917,7
								35	25	635,0	25	635,0	68 1/2	1739,9	69	1752,6
								45	28	711,2	28 1/4	717,6	64	1625,6	62 1/2	1587,5

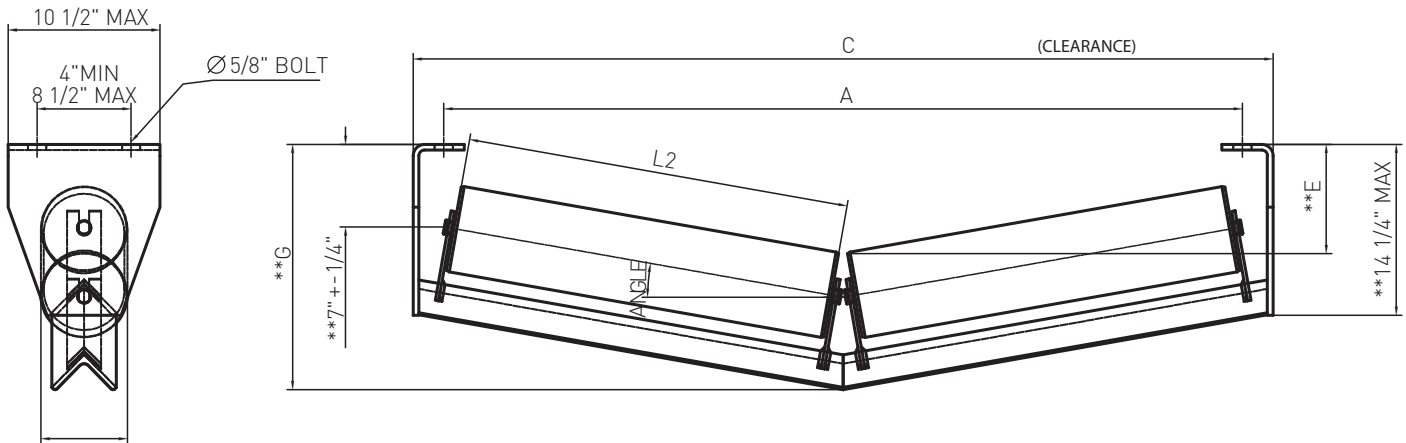
BELT WIDTH	K ± 1/4				L3		B		Dmax	
	Ø5	Ø6	inches	mm						
24	8 1/2	215,9	9	228,6	8,75	222,3	6	152,4	10	254
30	8 1/2	215,9	9	228,6	10,75	273,1	6	152,4	10	254
36	8 1/2	215,9	9	228,6	12,75	323,9	6	152,4	10	254
42	9	228,6	9 1/2	241,3	15,08	382,5	7,5	190,5	10	254
48	9	228,6	9 1/2	241,3	17,06	433,3	7,5	190,5	10	254
54	9 1/4	234,95	9 3/4	247,65	19,12	485,6	9	228,6	11,5	292,1
60	9 1/4	234,95	9 3/4	247,65	21,112	536,2	9	228,6	11,5	292,1
72	9 1/4	234,95	10	254	25,12	638,0	9	228,6	12	304,8

FLAT RETURNS (5" AND 6" DIAMETERS)



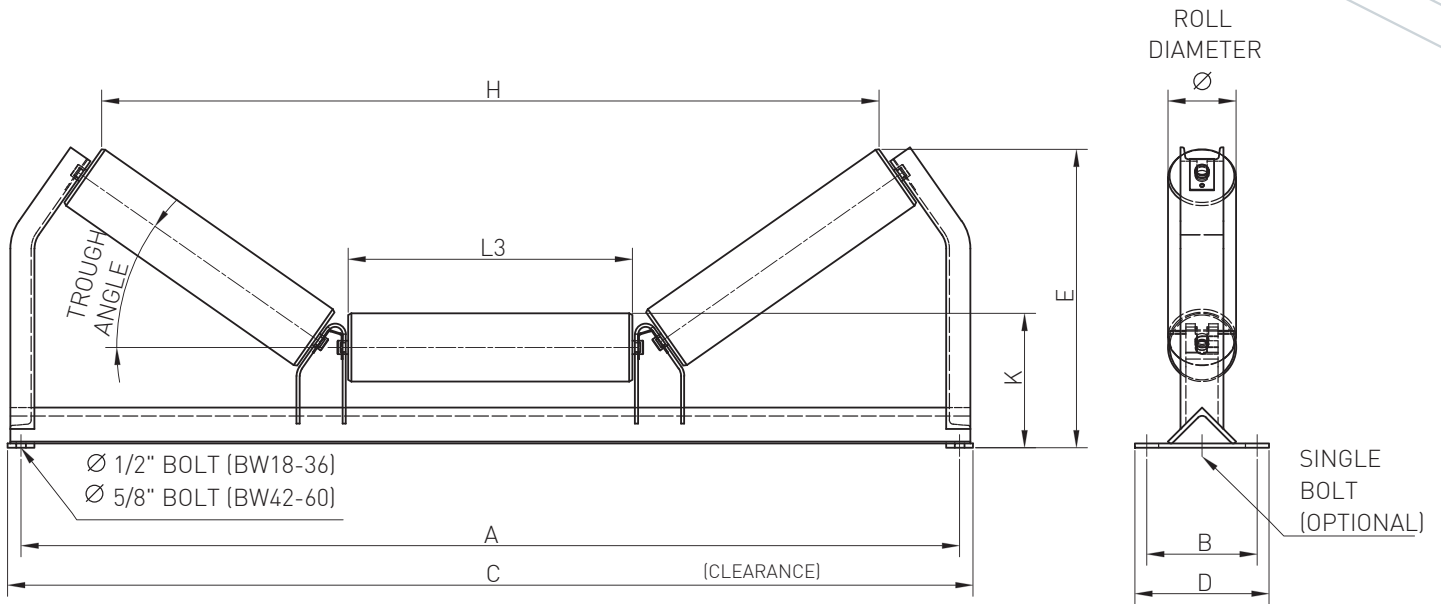
For wide base returns, use next higher belt width.
 *Some differences may exist in dimensions with some manufacturers.
 **Also available with 1 1/2" drop.

V-RETURNS



**Also available with 4 1/2" drop which decreases all vertical dimensions by 2 1/2"
 For wide base returns use next larger belt width.

BELT WIDTH	E ± 1/4																		
	10°				15°				Gmax				Fmin		L2		L1		
	Ø5	Ø6	Ø5	Ø6	Ø5	Ø6	Ø5	Ø6	Ø5	Ø6	Ø5	Ø6	Ø5	Ø6	inches	mm	inches	mm	
36	914,4	7 7/8	200	7 3/8	187,3	9 5/8	244,5	9 1/8	231,8	16 7/8	428,6	18 1/2	469,9	41	1041,4	19,12	485,648	38,81	985,774
42	1066,8	8 1/2	215,9	8	203,2	10 1/2	266,7	10	254,0	17 1/2	444,5	19 1/4	489,0	47	1193,8	22,81	579,374	44,81	1138,174
48	1219,2	9	228,6	8 1/2	215,9	11 1/4	285,8	10 3/4	273,1	18	457,2	20	508,0	53	1346,2	25,81	655,574	50,81	1290,574
54	1371,6	9 5/8	244,5	9 1/8	231,8	12 1/8	308,0	11 5/8	295,3	18 7/8	479,4	21 5/8	549,3	59	1498,6	28,81	731,774	56,81	1442,974
60	1524	10 1/8	257,2	9 5/8	244,5	12 7/8	327,0	12 3/8	314,3	19 1/2	495,3	22 3/8	586,3	65	1651	31,81	807,974	62,81	1595,374
72	1828,8	11 3/5	298,5	11 1/4	285,8	15 1/2	393,7	15	381,0	20 1/2	520,7	24 1/4	616,0	77	1955,8	37,81	960,374	74,81	1900,174

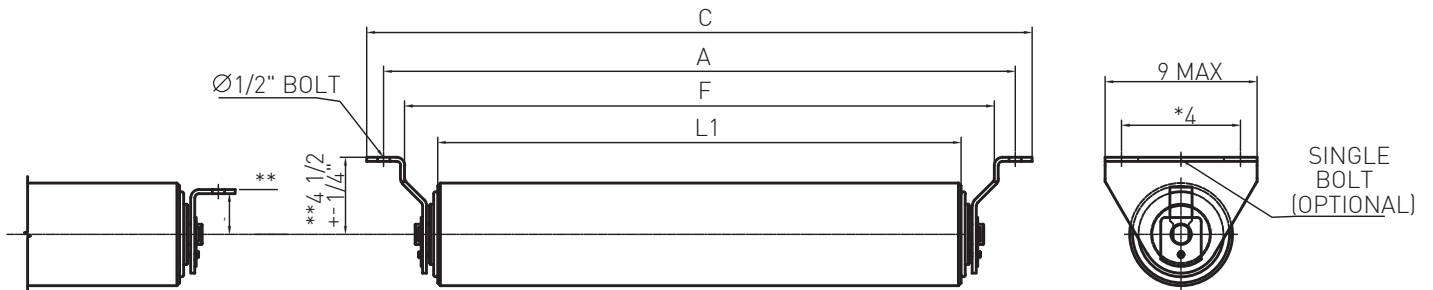


DESIGN ACCORDING TO CEMA D

BELT WIDTH	C WIDTH	A STANDARD	A WIDE	TROUGH ANGLE	E Max						H Max									
					Ø 4		Ø 5		Ø 6		Ø 4		Ø 5		Ø 6					
					inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm				
18	457,2	29	736,6	27	685,8	33	838,2	20	10 3/4	273,1	12 3/4	323,9			22 1/2	571,5	22 1/2	571,5		
									12 1/2	317,5	14 3/4	374,7			21	533,4	21	533,4		
									14	355,6	15 3/4	400,1			19	482,6	19	482,6		
24	609,6	35	889	33	838,2	39	990,6	20	11 1/2	292,1	13 1/2	342,9	12 3/4	323,9	28 1/2	723,9	28 1/2	723,9	27 1/2	698,5
									13 3/4	349,3	16	406,4	14 3/4	374,7	26 1/2	673,1	26 1/2	673,1	25	635,0
									15 1/2	393,7	17 1/2	444,5	15 3/4	400,1	24	609,6	24	609,6	22 1/2	571,5
30	762	41	1041,4	39	990,6	45	1143	20	12 1/2	317,5	14 1/4	362,0	13 1/2	342,9	34 1/2	876,3	34 1/2	876,3	33 1/2	850,9
									15	381,0	17 1/4	438,2	16	406,4	32	812,8	32	812,8	30 1/2	774,7
									17	431,8	19 1/4	489,0	17 1/2	444,5	29	736,6	29	736,6	27 1/2	698,5
36	914,4	47	1193,8	45	1143	51	1295,4	20	13 1/4	336,6	15 1/4	387,4	14 1/4	362,0	40 1/2	1028,7	40 1/2	1028,7	29 1/2	749,3
									16 1/4	412,8	18 3/4	476,3	17 1/4	438,2	37 1/2	952,5	37 1/2	952,5	36	914,4
									18 3/4	476,3	20 3/4	527,1	19 1/4	489,0	34	863,6	34	863,6	32 1/2	825,5
42	1066,8	53	1346,2	51	1295,4	57	1447,8	20	14	355,6	16 1/4	412,8	15 1/4	387,4	46 1/2	1181,1	46 1/2	1181,1	45 1/2	1155,7
									17 3/4	450,9	20	508,0	18 3/4	476,3	43	1092,2	43	1092,2	41 1/2	1054,1
									20 1/4	514,4	22 1/2	571,5	20 3/4	527,1	39	990,6	39	990,6	37 1/2	952,5
48	1219,2	59	1498,6	57	1447,8	63	1600,2	20	15	381,0	17 1/4	438,2	16 1/4	412,8	52 1/2	1333,5	52 1/2	1333,5	51 1/2	1308,1
									19	482,6	21 1/4	539,8	20	508,0	48 1/2	1231,9	48 1/2	1231,9	47	1193,8
									21 3/4	552,5	23 3/4	603,3	22 1/2	571,5	44	1117,6	44	1117,6	45 1/2	1079,5
54	1371,6	65	1651	63	1600,2	69	1752,6	20	16 3/4	425,5	19 1/4	489,0	17 1/4	438,2	58 1/2	1485,9	58 1/2	1485,9	57 1/2	1460,5
									20 1/4	514,4	22 1/2	571,5	21 1/4	539,8	54	1371,6	54	1371,6	52 1/2	1333,5
									23 1/4	590,6	25 1/4	641,4	23 3/4	603,3	49	1244,6	49	1244,6	47 1/2	1206,5
60	1524	71	1803,4	69	1752,6	75	1905	20	17 3/4	450,9	20 1/2	520,7	19 1/4	489,0	64 1/2	1638,3	64 1/2	1638,3	62 1/2	1587,5
									21 1/2	546,1	25	635,0	22 1/2	571,5	59 1/2	1511,3	59 1/2	1511,3	58	1473,2
									25	635,0	28 1/4	717,6	25 1/4	641,4	54	1371,6	54	1371,6	52 1/2	1333,5

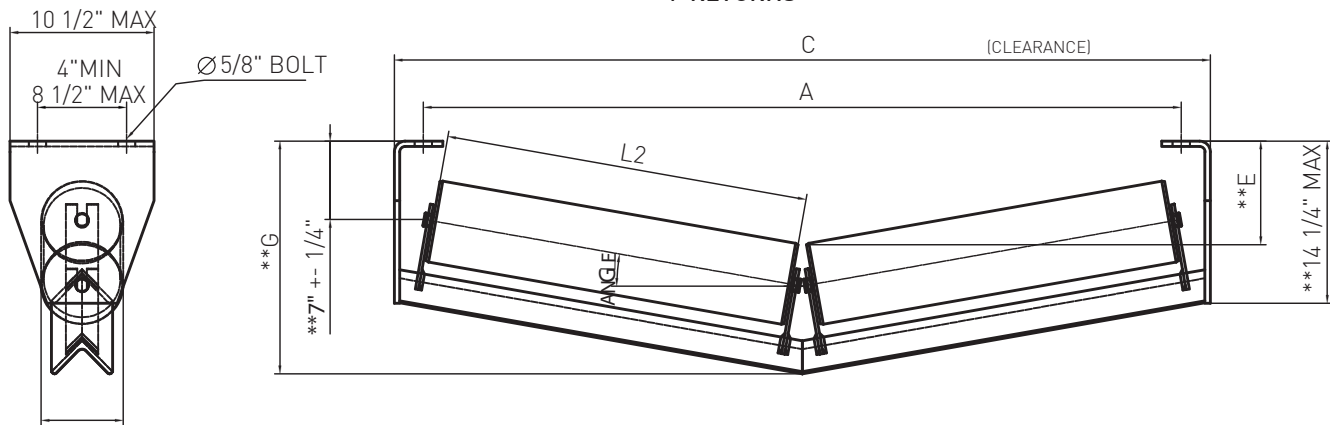
BELT WIDTH	K ± 1/4						L3		B		Dmax	
	Ø4		Ø5		Ø6		inches	mm	inches	mm	inches	mm
18	8	203,2	8 1/2	215,9			6,69	169,9	6	152,4	10	254
24	8	203,2	8 1/2	215,9	9	228,6	8,81	223,8	6	152,4	10	254
30	8	203,2	8 1/2	215,9	9	228,6	10,81	274,6	6	152,4	10	254
36	8	203,2	8 1/2	215,9	9	228,6	12,81	325,4	6	152,4	10	254
42	8 1/2	215,9	9	228,6	9 1/2	241,3	15,12	384,0	7,5	190,5	10	254
48	8 1/2	215,9	9	228,6	9 1/2	241,3	17,12	434,8	7,5	190,5	10	254
54	8 3/4	222,25	9 1/4	234,95	9 3/4	247,7	19,19	487,4	9	228,6	11,5	292,1
60	8 3/4	222,25	9 1/4	234,95	9 3/4	247,7	21,19	538,2	9	228,6	11,5	292,1

FLAT RETURNS (4", 5" AND 6" DIAMETERS)



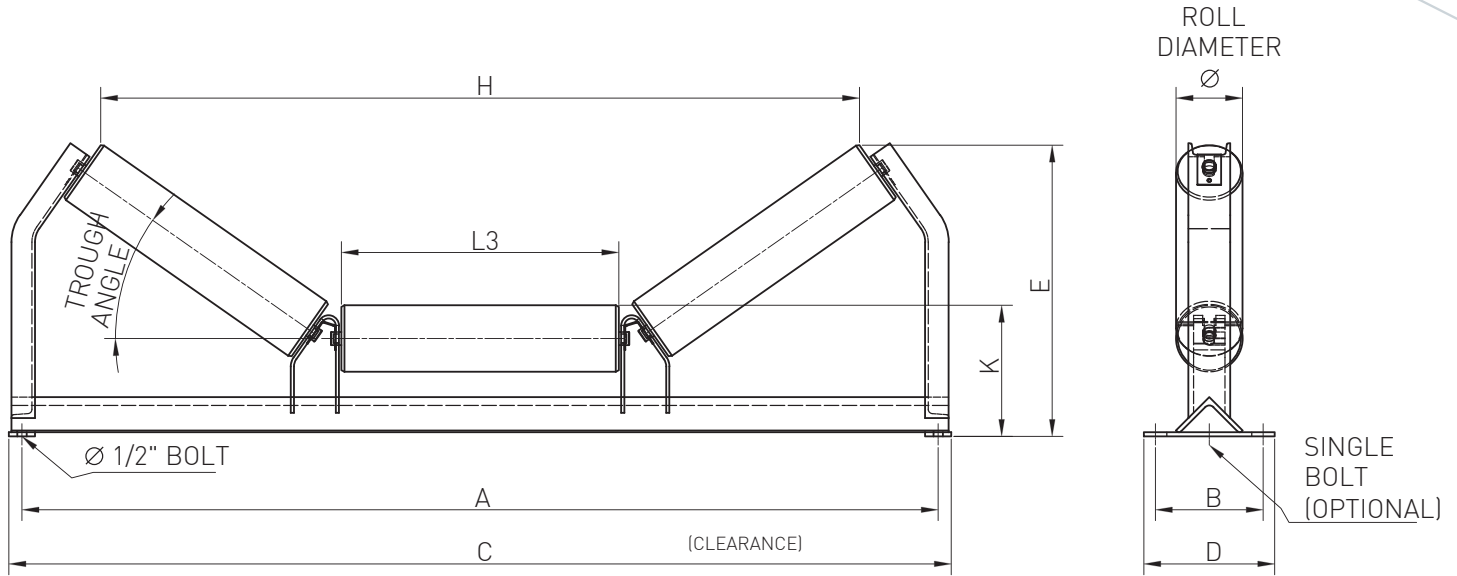
For wide base returns, use next higher belt width.
 *Some differences may exist in dimensions with some manufacturers.
 **Also available with 1 1/2" drop.

V-RETURNS



**Also available with 4 1/2" drop which decreases all vertical dimensions by 2 1/2"
 For wide base returns use next larger belt width.

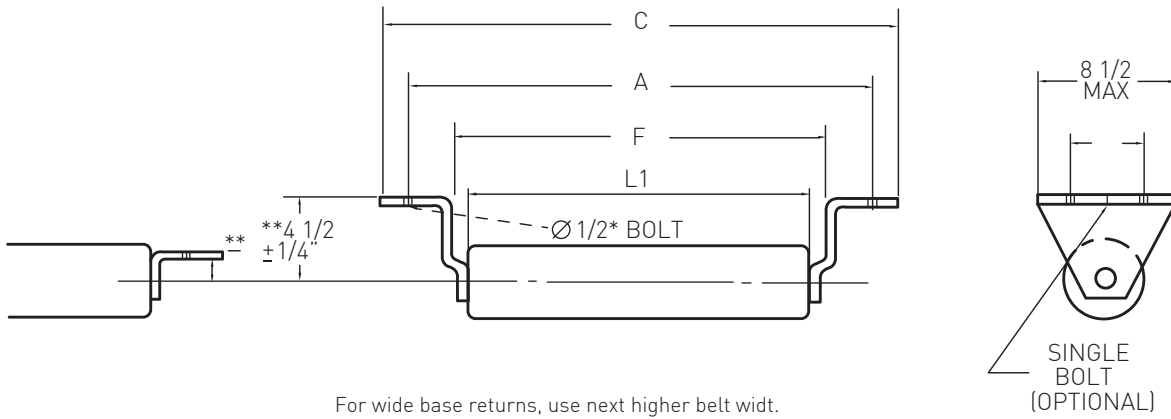
BELT WIDTH	E ± 1/4																		
	10°				15°				Gmax				Fmin		L1		L2		
	Ø5		Ø6		Ø5		Ø6		10°		15°								
inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm		
24	609,6	6 3/4	171,5	6 1/4	158,8	8	203,2	7 1/2	190,5	15 7/8	403,2	16 3/4	425,5	29	736,6	26,62	676,1	12,81	325,4
30	762	7 1/2	190,5	7	177,8	9	228,6	8 1/2	215,9	16 3/8	415,9	17 3/4	450,9	25	635	32,62	828,5	16	406,4
36	914,4	7 7/8	200,0	7 3/8	187,3	9 5/8	244,5	9 1/8	231,8	16 3/4	425,5	18 1/2	469,9	41	1041,4	38,62	980,9	19,19	487,4
42	1066,8	8 1/2	215,9	8	203,2	10 1/2	266,7	10	254,0	17 3/8	441,3	19 1/4	489,0	47	1193,8	44,62	1133,3	22,62	574,5
48	1219,2	9	228,6	8 1/2	215,9	11 1/4	285,8	10 3/4	273,1	17 7/8	454,0	20	508,0	53	1346,2	51,62	1311,1	25,62	650,7
54	1371,6	9 5/8	244,5	9 1/8	231,8	12 1/8	308,0	11 5/8	295,3	18 7/8	479,4	21 5/8	549,3	59	1498,6	56,62	1438,1	28,62	726,9
60	1524	10 1/8	257,2	9 5/8	244,5	12 7/8	327,0	12 3/8	314,3	19 1/2	495,3	22 3/8	568,3	65	1651	62,62	1590,5	31,62	803,1



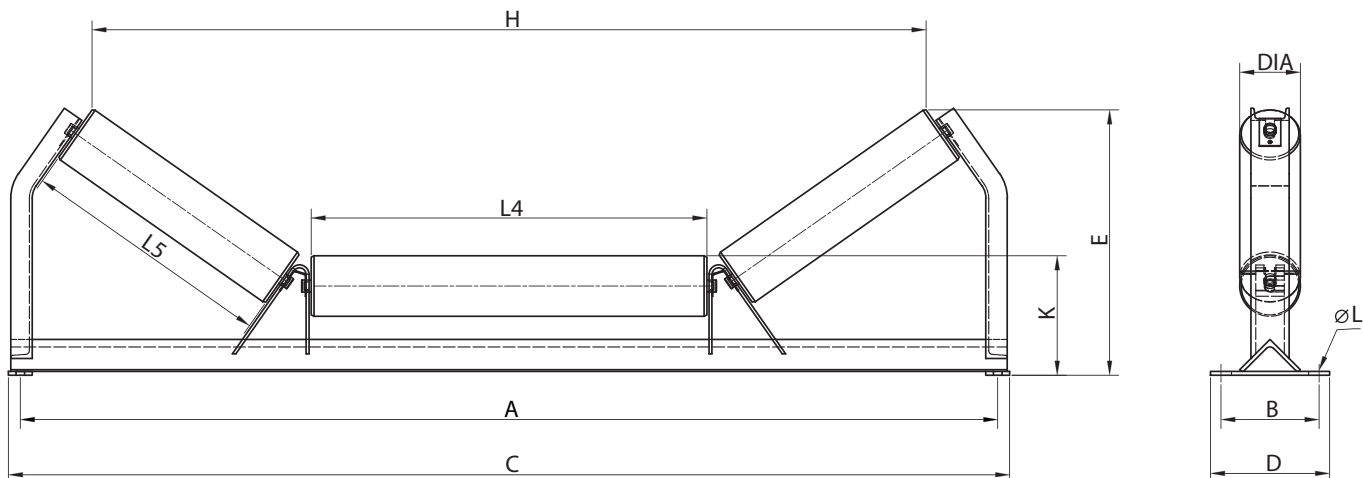
DESIGN ACCORDING TO CEMA B

BELT WIDTH		C WIDTH		A STANDARD		A WIDE		TROUGH ANGLE	E Max				H Max			
inches	mm	inches	mm	inches	mm	inches	mm		Ø 4		Ø 5		Ø 4		Ø 5	
									inches	mm	inches	mm	inches	mm	inches	mm
18	457,2	29	736,6	27	685,8	-	-	20	10	254,0	10 1/4	260,4	22	558,8	21 3/4	552,5
								35	11 1/2	292,1	12	304,8	20 1/4	514,4	19 3/4	501,7
								45	12 1/2	317,5	12 3/4	323,9	18 1/2	469,9	18	457,2
24	609,2	35	889	33	838,2	-	-	20	10 3/4	273,1	11 1/4	285,8	28	711,2	27 3/4	704,9
								35	12 3/4	323,9	13 1/4	336,6	25 3/4	654,1	25 1/4	641,4
								45	14	355,6	14 1/4	362,0	23 3/4	603,3	23	854,2
30	762	41	1041,4	39	990,6	-	-	20	11 1/2	292,1	12	304,8	34	863,6	7	177,8
								35	13 3/4	349,3	14 1/4	362,0	31 1/4	793,8	30 3/4	781,1
								45	15 3/4	400,1	15 3/4	400,1	28 3/4	730,3	7	177,8
36	914,4	47	1193,8	45	1143	-	-	20	12 1/4	311,2	12 3/4	323,9	40	1016,0	39 3/4	1009,7
								35	15	381,0	15 1/2	393,7	37	939,8	36 1/2	927,1
								45	18	457,2	17 1/4	438,2	35	889,0	33 1/4	844,6
42	1066,8	53	1346,2	51	1295,4	-	-	20	13 1/2	342,9	14	355,6	46	1168,4	45 3/4	1162,1
								35	16 3/4	425,5	17 1/4	438,2	42 1/2	1079,5	42	1066,8
								45	19 3/4	501,7	19 1/4	489,0	39 1/4	997,0	38 1/4	971,6
48	1219,2	59	1498,6	57	1447,8	-	-	20	13 3/4	349,3	15	381,0	52	1320,8	51 3/4	1314,5
								35	18	457,2	18 1/2	469,9	48	1219,2	47 1/2	1206,5
								45	20 3/4	527,1	20 3/4	527,1	44 1/2	1130,3	43 1/4	1098,6

BELT WIDTH	K ± 1/4				L1		L2		L3		B		Dmax		Fmin	
	Ø 4	Ø 5			inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
18	7	177,8	7,5	190,5	20,75	527,05	-	-	6,62	168,148	6	152,4	8,5	215,9	22	558,8
24	7	177,8	7,5	190,5	26,75	679,45	-	-	8,62	218,948	6	152,4	8,5	215,9	28	711,2
30	7	177,8	7,5	190,5	32,75	831,85	-	-	10,62	269,748	6	152,4	8,5	215,9	34	863,6
36	7	177,8	7,5	190,5	38,75	984,25	-	-	12,62	320,548	6	152,4	8,5	215,9	40	1016
42	7,5	190,5	8	203,2	44,75	1136,65	-	-	14,62	371,348	7,5	190,5	10	254	46	1168,4
48	7,5	190,5	8	203,2	55,118	1400,0	-	-	18,307	465,0	7,5	190,5	10	254	52	1320,8



For wide base returns, use next higher belt width.
 *Some differences may exist in dimensions with some manufacturers.
 **Also available with $1 \frac{1}{2}$ " drop.



DESIGN ACCORDING TO CEMA C

BELT WIDHT		C WIDHT		A STANDARD		A WIDE		E Max						H Max					
inches mm		inches mm		inches mm		inches mm		Ø4		Ø5		Ø6		Ø4		Ø5		Ø6	
inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
24	609,6	35	889	33	838,2	39	990,6	11 7/8	301,6	11 3/8	288,9	11 7/8	301,6	33	838,2	32 3/4	831,9	32 3/8	822,3
30	762	41	1041,4	39	990,6	45	1143	10 7/8	276,2	11 3/8	288,9	11 7/8	301,6	35	889,0	32 3/4	831,9	34 3/8	873,1
36	914,4	47	1193,8	45	1143	51	1295,4	10 7/8	276,2	11 3/8	288,9	11 7/8	301,6	41	1.041,4	40 3/4	1035,1	40 3/8	1025,5
42	1066,8	53	1346,2	51	1295,4	57	1447,8	11	279,4	11 1/2	292,1	12	304,8	47	1.193,8	46 3/4	1187,5	46 3/8	1177,9
48	1219,2	59	1498,6	57	1447,8	63	1600,2	11	279,4	11 1/2	292,1	12	304,8	53	1.346,2	52 3/4	1339,9	52 3/8	1330,3
54	1371,6	65	1651	63	1600,2	69	1752,6	11 1/4	285,8	12 1/4	311,2	12 1/4	311,2	59	1.498,6	58 3/4	1492,3	58 3/8	1482,7
60	1524	71	1803,4	69	1752,6	75	1905	11 1/4	285,8	12 1/4	311,2	12 1/4	311,2	65	1.651,0	64 3/4	1644,7	64 3/8	1635,1

BELT WIDHT	K ± 1/4						L5	L4	B	Dmax	L				
	Ø4	Ø5	Ø6	inches	mm	inches									
inches	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches				
24	8	203,2	8 1/2	215,9	9	228,6	7,874	200,0	15,12	384,0	6	152,4	10	254	0,5
30	8	203,2	8 1/2	215,9	9	228,6	7,874	200,0	20,62	523,7	6	152,4	10	254	0,5
36	8	203,2	8 1/2	215,9	9	228,6	7,874	200,0	26,62	676,1	6	152,4	10	254	0,5
42	8 1/2	215,9	9	228,6	9 1/2	241,3	7,874	200,0	32,62	828,5	7,5	190,5	10	254	0,625
48	8 1/2	215,9	9	228,6	9 1/2	241,3	7,874	200,0	38,62	980,9	7,5	190,5	10	254	0,625
54	8 3/4	222,25	9 1/4	234,95	9 3/4	247,7	7,874	200,0	44,62	1133,3	9	228,6	11,5	292,1	0,625
60	8 3/4	222,25	9 1/4	234,95	9 3/4	247,7	7,874	200,0	50,62	1285,7	9	228,6	11,5	292,1	0,625

DESIGN ACCORDING TO CEMA D															
								E Max				H Max			
BELT WIDTH		C WIDTH		A STANDARD		A WIDE		Ø5		Ø6		Ø5		Ø6	
inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
24	609,6	35	889	33	838,2	39	990,6	11 5/8	295,3	12 1/8	308,0	32 3/4	831,9	32 3/8	822,3
30	762	41	1041,4	39	990,6	45	1143	12 1/4	311,2	12 3/4	323,9	34 3/4	882,7	34 3/8	873,1
36	914,4	47	1193,8	45	1143	51	1295,4	12 1/4	311,2	12 3/4	323,9	40 3/4	1.035,1	40 3/8	1025,5
42	1066,8	53	1346,2	51	1295,4	57	1447,8	12 1/4	311,2	12 3/4	323,9	46 3/4	1.187,5	46 3/8	1177,9
48	1219,2	59	1498,6	57	1447,8	63	1600,2	12 1/4	311,2	12 3/4	323,9	52 3/4	1.339,9	52 3/8	1330,3
54	1371,6	65	1651	63	1600,2	69	1752,6	12 1/4	311,2	12 3/4	323,9	58 3/4	1.492,3	58 3/8	1482,7
60	1524	61	1549,4	59	1498,6	75	1905	12 1/4	311,2	12 3/4	323,9	64 3/4	1.644,7	64 3/8	1635,1
72	1828,8	83	2108,2	81	2057,4	87	2209,8	12 1/4	311,2	12 3/4	323,9	76 3/4	1.949,5	76 3/8	1939,9

BELT WIDTH	K ± 1/4		Ø5		Ø6		L1		L5		L4		B		Dmax		L	
	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
24	8 1/2	215,9	9	228,6	26,81	681,0	7,874	200,0	14,62	371,3	6	152,4	10	254	1/2	12,7		
30	8 1/2	215,9	9	228,6	32,81	833,4	7,874	200,0	20,62	523,7	6	152,4	10	254	1/2	12,7		
36	8 1/2	215,9	9	228,6	38,81	985,8	7,874	200,0	26,62	676,1	6	152,4	10	254	1/2	12,7		
42	9	228,6	9 1/2	241,3	44,81	1138,2	7,874	200,0	32,92	836,2	7,5	190,5	10	254	5/8	15,875		
48	9	228,6	9 1/2	241,3	50,81	1290,6	7,874	200,0	38,62	980,9	7,5	190,5	10	254	5/8	15,875		
54	9 1/4	234,95	9 3/4	247,65	56,81	1443,0	7,874	200,0	44,62	1133,3	9	228,6	11,5	292,1	5/8	15,875		
60	9 1/4	234,95	9 3/4	247,65	62,81	1595,4	7,874	200,0	50,62	1285,7	9	228,6	11,5	292,1	5/8	15,875		
72	9 1/2	241,3	10	254	74,81	1900,2	7,874	200,0	62,62	1590,5	9	228,6	12	304,8	5/8	15,875		

DESIGN ACCORDING TO CEMA E															
								E Max				H Max			
BELT WIDTH		C WIDTH		A STANDARD		A WIDE		Ø6		Ø7		Ø6		Ø7	
inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
36	914,4	47	1193,8	45	1143	51	1295,4	14	355,6	14 1/2	368,3	43 1/8	1.095,4	42 7/8	1089,0
42	1066,8	53	1346,2	51	1295,4	57	1447,8	14	355,6	14 1/2	368,3	49 1/8	1.247,8	48 7/8	1241,4
48	1219,2	59	1498,6	57	1447,8	63	1600,2	14	355,6	14 1/2	368,3	55 1/8	1.400,2	54 7/8	1393,8
54	1371,6	65	1651	63	1600,2	69	1752,6	14	355,6	14 1/2	368,3	61 1/8	1.552,6	60 7/8	1546,2
60	1524	71	1803,4	69	1752,6	75	1905	14	355,6	14 1/2	368,3	67 1/8	1.705,0	66 7/8	1698,6
72	1828,8	83	2108,2	81	2057,4	87	2209,8	14 3/8	365,1	14 7/8	377,8	79 1/8	2.009,8	78 7/8	2003,4
84	2133,6	95	2413	93	2362,2	99	2514,6	14 5/8	371,5	15 1/8	384,2	91 1/8	2.314,6	90 7/8	2308,2
96	2438,4	107	2717,8	105	2667	111	2819,4	14 5/8	371,5	15 1/8	384,2	103 1/8	2.619,4	102 7/8	2613,0

K ± 1/4															
BELT WIDTH	Ø6		Ø7		L5		L4		B		D		L		
inches	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	
36	10 3/4	273,05	11 1/4	285,75	7,874	200,0	25,25	641,4	9,5	241,3	14	355,6	3/4	19,05	
42	10 3/4	273,05	11 1/4	285,75	7,874	200,0	31,12	790,4	9,5	241,3	14	355,6	3/4	19,05	
48	10 3/4	273,05	11 1/4	285,75	7,874	200,0	37,12	942,8	9,5	241,3	14	355,6	3/4	19,05	
54	10 3/4	273,05	11 1/4	285,75	7,874	200,0	43,12	1095,2	9,5	241,3	14	355,6	3/4	19,05	
60	10 3/4	273,05	11 1/4	285,75	7,874	200,0	49,12	1247,6	9,5	241,3	14	355,6	3/4	19,05	
72	11 1/2	292,1	12	304,8	7,874	200,0	61,12	1552,4	9,5	241,3	14	355,6	3/4	19,05	
84	11 3/4	298,45	12 1/4	311,15	7,874	200,0	67	1701,8	12	304,8	16,5	419,1	3/4	19,05	
96	11 3/4	298,45	12 1/4	311,15	7,874	200,0	73	1854,2	12	304,8	16,5	419,1	3/4	19,05	



PULLEYS

55-64



Introduction

Pulleys are similar to rollers but without bearings or rotating parts inside. They are placed in the front and rear of the conveyor and provide traction to the belt.

Applications

The ULMA heavy-duty series pulleys are generally used in steel plants, mines, thermal power stations, ports, quarries and in other similar working conditions.

Shape and dimensions

SHELL

Diameters exceeding 400 millimetres are built with curved metal and welded lengthwise, being subsequently stabilised to remove material stresses.

In diameters less than 400 millimetres, seamless tubes can be used. (Perforated bar).

The external diameter D can be flat or crown (according to requirements) and corresponding to the shell diameter. Coatings will increase that diameter.

Concentricity should not exceed 1% of its diameter D .

SHAFT

Shafts are manufactured and properly machined from F-1140 standard steel. They can also be custom manufactured from any other material.

Calculation and sizing of pulleys shafts

Calculation method

On pulleys, the only calculation that is performed is on the shaft diameter according to ANSI / CEMA standards. Allowable torsion, radius and shear limitation are all taken into account. The diameter of the shaft is calculated using five methods:

- 1 - Diameter according to allowable shear stress (τ) $d = f(\tau)$ (idler bearing).
- 2 - Diameter according to the allowable deflection or sag (Fixing units).
- 3 - Diameter according to the shaft inclination angle. $d = f(\tan \alpha)$
- 4 - Diameter according to the allowable twisting angle.
- 5 - Diameter according to bearing life.

The largest shaft diameter is chosen after these methods are calculated.

1-Diameter according to allowable shear stress (τ) $d=f(\tau)$ (idler bearing).

The following materials resistance formula is used in accordance with CEMA:

$$d = \sqrt[3]{\frac{16 \cdot M_I}{\pi \cdot \tau}}$$

Where:

- $M_I = \sqrt{(F_S \cdot M_F)^2 + M_T^2}$ Ideal or equivalent time.
- τ : Work stress shear (450 kg/cm² or according to customer).

A combined outcome between flex and torque is taken into account.

Where:

- FS=1.5 safety factor
- M_F Bending time
- M_T Torque time

2-Diameter according to the allowable deflection or sag $d = f(f)$ (fixing units).

The value of the deflection is usually a fraction of the distance between supports (d_{ea}).

Normally: $f_{max} = \frac{0.6 \cdot d_{ea}}{1000}$

Using the following formula, the inertia of the circular section of the axle is obtained:

$$f = \frac{P \cdot a}{24 \cdot E \cdot I} \cdot 3 \cdot d_{ea}^2 - 4 \cdot a^2$$

Where:

- a: Support distance -moyu
- E: Module el.stico of YOUNG (210 GPa)

Therefore, the minimum diameter:

$$d = \sqrt[3]{\frac{64 \cdot I}{\pi}}$$

3-Diameter according to the shaft inclination angle $d = f(\text{tg}\alpha)$.

This formula calculates the elastic tangent of the axle. The minimum diameter is obtained with the following formula:

$$d = \frac{1}{21.3} \cdot \sqrt[4]{\frac{M_F \cdot (d_{ea} - 2a)}{\text{tg}\alpha}}$$

Usually 0.0015 radius is taken for this angle.

4-Diameter according to the allowable torque angle.

Torque angle is limited to 0.5 j. With this information, and the torque that is applied to the pulley, the diameter is obtained.

$$d = \sqrt[4]{\frac{I_P \cdot 32}{\pi}}$$

Where:

- $I = \frac{M_T \cdot d_{ea}}{\theta \cdot G}$ (mm⁴)
- θ Maximim torque angle (rad)
- G Young torque module (80GPa)
- M_T Torque time

5-Diameter according to bearing life.

Bearing life is calculated using the following formula:

$$L_{10} = \frac{1000000}{6 \cdot n} \left(\frac{C}{P} \right)^p$$

Where:

- L_{10} Average life, in service hours
- n = Pulley revolutions, rpm.
- C Dynamic bearing load, in N.
- P Load carried by the pulley, the result of the stresses plus the weight of the pulley itself.
- p = Exponent,
 - for ball bearings $p = 3$
 - for roller bearings $p = 10/3 = 3,3$

It is recommended to use roller bearings due to their higher load capacity when compared to other types of bearings.

It is likewise recommended to use bearings that have a 40,000 working hours lifespan and to not use bearings with a lifespan below 30,000 working hours. These calculations must follow this recommendation.

Calculating the thickness of the shell and side discs

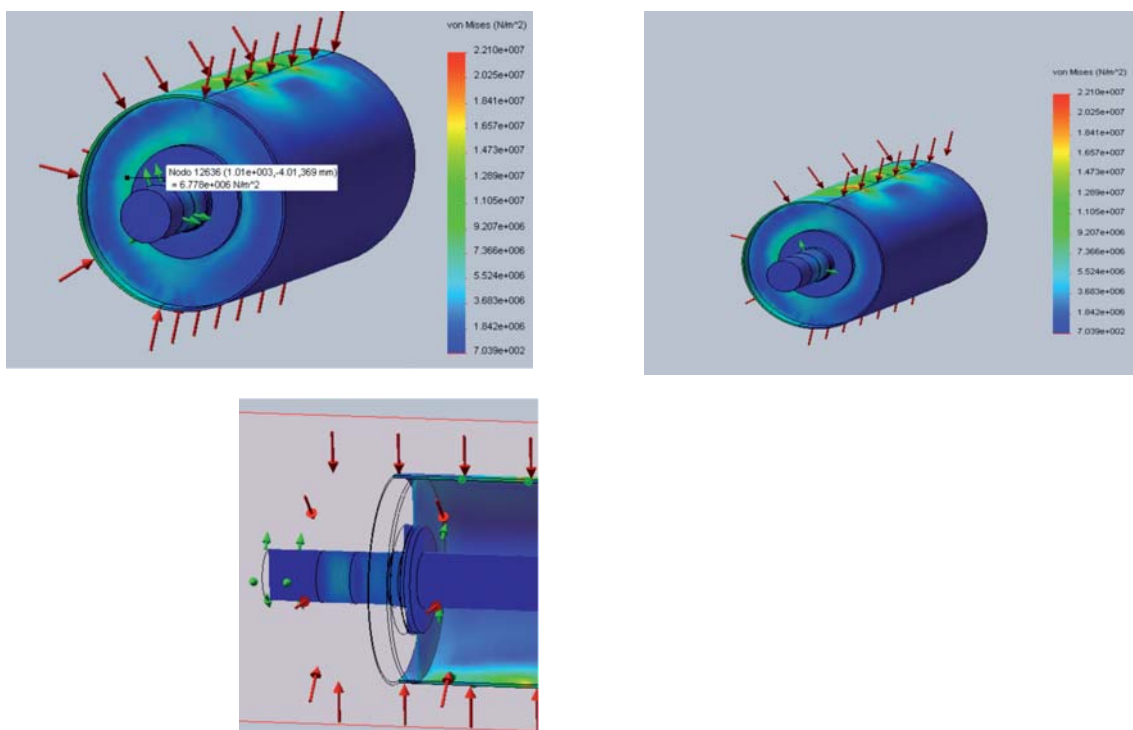
Calculation method

The following formula is used to calculate the thickness of the shell and side discs:

- 1) Stress condition of the pulley (VON MISSES)
- 2) Pulley deformation

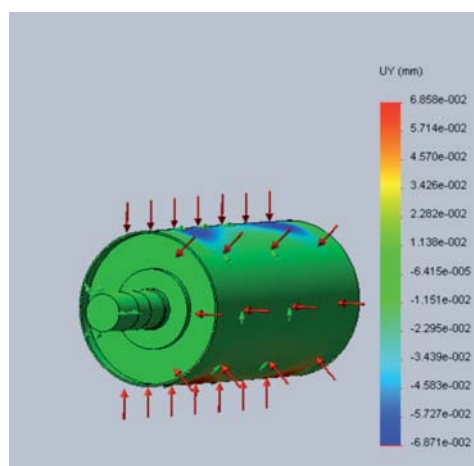
1) Stress condition of the pulley

The elastic limit of the steel is used as a reference. Based on this limit, the thickness of the shell and side discs is adjusted.



2) Elastic condition of the pulley.

Unless otherwise stated by the customer, elastic deformations on the pulley are calculated by taking into account a 0.5mm/m deflection.

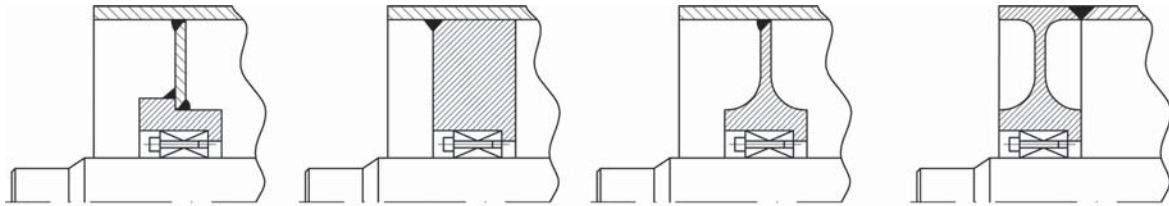


SIDE DISCS

Depending on the application, the pulleys have been designed with these types of side discs:

- 1 -Welded disc.
- 2 - Integrated disc.
- 3 - Contoured integrated disc.
- 4 - Disc in turbine, type T

These designs have been designed to reduce the stress and tension areas produced during the welding process.



1-Hub with welded disc

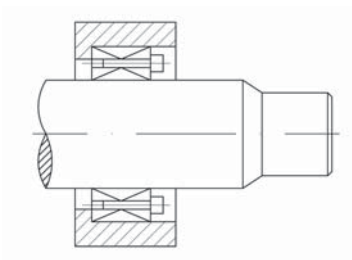
2-Solid hub

3-Contoured hub

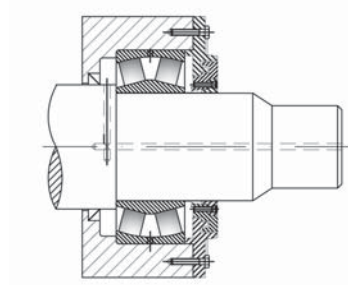
4-Type "T" or turbine

PULLEY AXLE ATTACHMENT

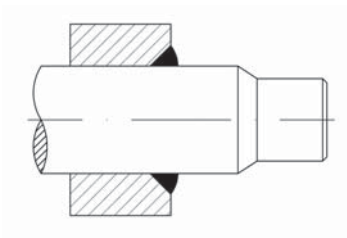
Attaching the axle onto the ferrule can be achieved using various systems:



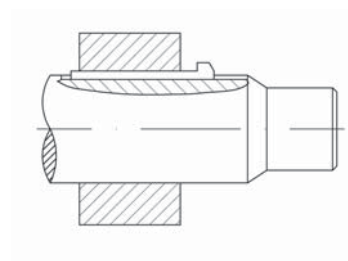
a- Pressure rings or conical units



b- Bearings



c- Welding



d -Smooth or tapered keyway

It is recommended that welding the shaft to the side discs or using tapered keyways should only be used under low workload requirements, because stress and vibration on the pulleys can cause a rupture of the weld seams and detachment of the keyway.

Pressure rings or conical units are recommended due to their great torque transmission, as well as their ease of assembly and disassembly.

The brands we work with are:

ECOLOC

RINGFEDER

TOLLOK

LAGGINGS

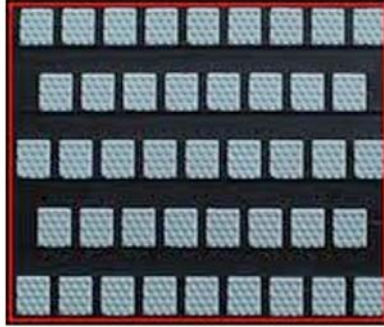
The laggings that we provide are: natural rubber, ceramic and polyurethane.

Natural rubber laggings can be supplied with the following shapes: Chevron (V), Diamond (Rhombic), Smooth and Custom order.



Rubber laggings can be supplied hot or cold vulcanized.

Thicknesses range from 6 to 40 millimetres and hardnesses from 40 to 90 Shore A.



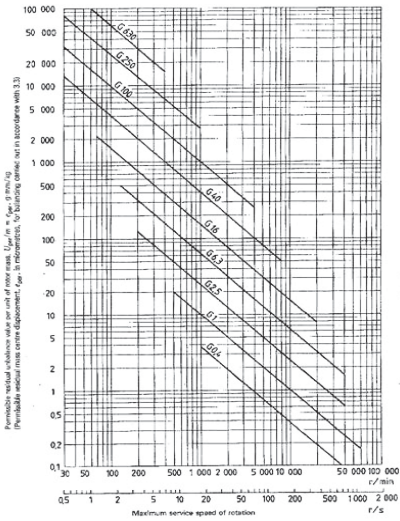
BALANCING

The pulleys are statically balanced. Pulleys may be balanced dynamically using custom specifications. All pulleys are internally balanced.

Defining the accurate balance point is essential in order for the pulleys to perform correctly without any vibrations. This depends in large part on the actual working revolutions and the size and shape of the pulley. The following table contains examples to assist in the selection of balancing grades that can be applied to the pulleys we need to balance. We must keep in mind that an unbalanced pulley will create vibrations.

Q 630	Two stroke engine crankshaft mounted on rigid bearings.
Q 250	Four stroke engine crankshaft mounted on rigid bearings or marine diesel engines crankshaft mounted on elastic bearings.
Q 100	Four piston diesel engine crankshaft mounted on rigid bearings.
Q 40	Automobile rims and tires. Fast 6 cylinder diesel engine crankshafts. Locomotive, truck and coach engines.
Q 16	Joined axles, transmissions. Four stroke engines on rigid bearings, having 6 or more cylinders. Locomotive, truck and coach engines.
Q 6.3	Specially joined axles, electric motor rotors, machining tools rotating parts, centrifugal drums, fans, flywheels. Locomotive, truck and coach engine crankshaft parts. Special engine crankshafts of 6 or more cylinders.
Q 2.5	Turbine generators, small engine rotors, special electric motors, steam and gas turbines, fans, machining tool axles. Special crankshaft parts.
Q 1 precision	Grinder drives, special small motor rotors, turbo propellers, tape and video recorder drives.
Q 0.4 high precision	High precision grinder rotors, disk spindles and impellers.

Is recommended for large pulleys (\varnothing shell > 350 mm) and Q16 for smaller pulleys.



Once the pulley's RPM and balancing grade are established, we use the following graph to obtain datum: U.

The maximum allowable imbalance (des.admis) is obtained from the following formula:

$$\text{des.admis.} = \frac{U \times m}{r}$$

Datum	Description	Units
Des.admis.	Maximum allowable imbalance	gr
U	Allowable residual imbalance	gr•mm
m	Mass of rotating parts	Kg
r	Radius in which we will place the supply of material	mm

HEAT TREATMENT

Heat treatment eliminates internal stresses produced by welding on those parts on which it is required. Should the provider already apply a stress relief process which is governed and approved by a competent body, it will be understood to be a general guideline.



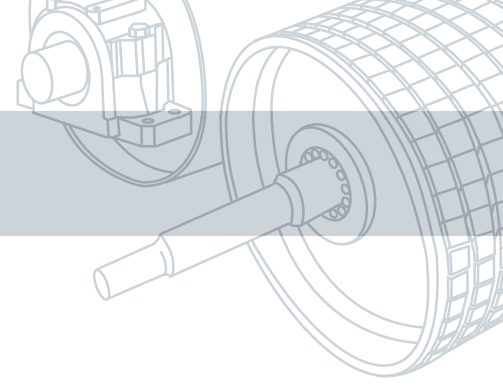
NON-DESTRUCTIVE TESTING

These are performed to certify that the welds have been performed correctly, in order to avoid imperfections.



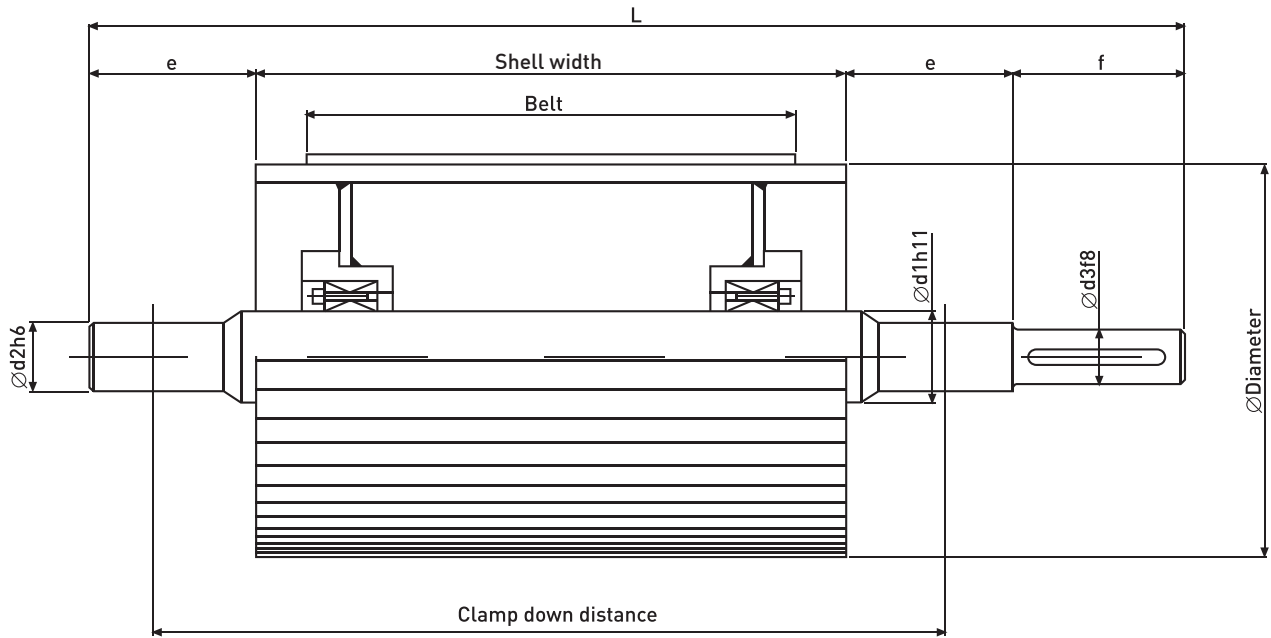
SHIPPING PACKAGING

The pulley shall be provided with suitable materials packed for international transport.

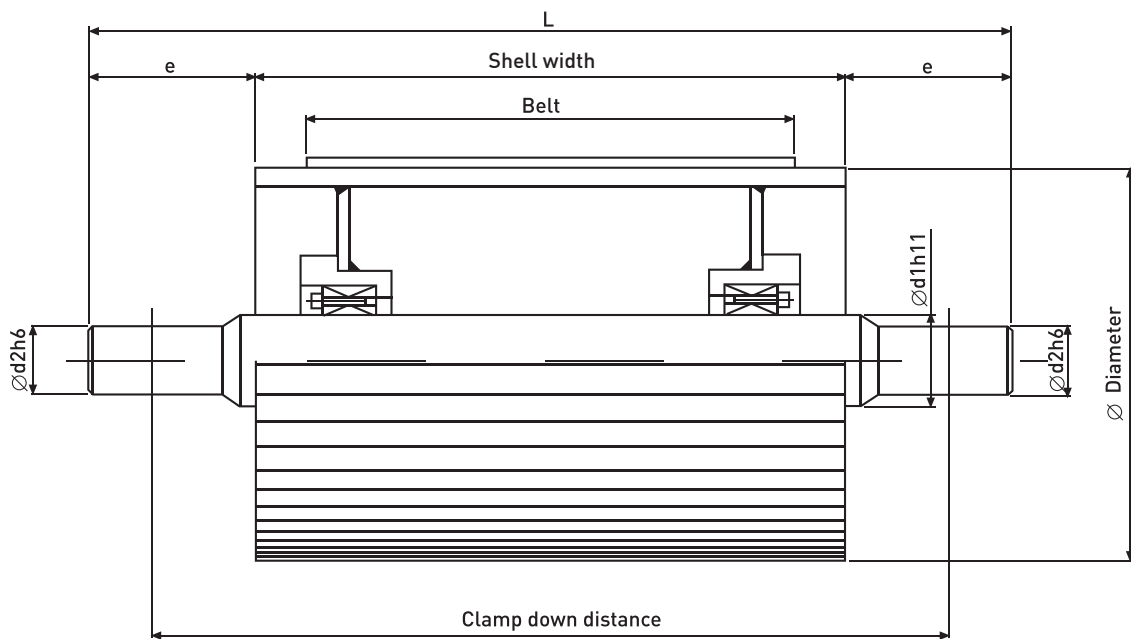


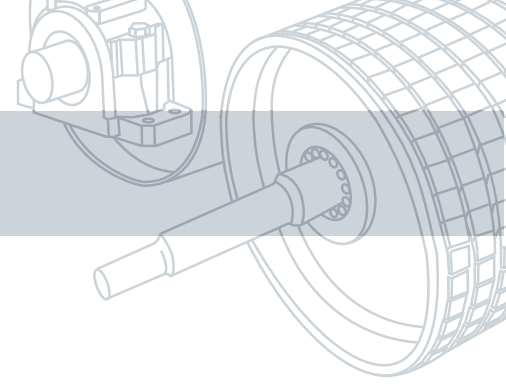
DIMENSIONS

DRIVE PULLEY



RETURN PULLEY





Belt	Shell width	Clamp down distance	f	e	L	Diameter	d1	d2	d3
400	500	675	60	100	795	315	50	40	35
			65	120	805	400	70	50	45
			80	150	835	500	90	65	60
500	600	775	65	120	905	315	70	50	45
			80	150	935	400	90	60	55
			90	160	955	500	110	80	75
650	750	950	65	120	1080	315	70	50	45
			80	150	1110	400	90	60	55
			90	160	1130	500	110	80	75
			110	190	1170	630	130	100	95
800	950	1150	65	120	1280	315	70	50	45
			80	150	1310	400	90	60	55
			90	160	1330	500	110	80	75
			110	190	1370	630	130	100	95
			120	230	1390	800	150	125	120
1000	1150	1350	65	120	1280	315	70	50	45
			80	150	1310	400	90	60	55
			90	160	1330	500	110	80	75
			110	190	1370	630	130	100	95
			120	230	1390	800	150	125	120
			140	270	1430	1000	190	160	155
1200	1400	1650	65	120	1280	315	70	50	45
			80	150	1310	400	90	60	55
			90	160	1330	500	110	80	75
			110	190	1370	630	130	100	95
			120	230	1390	800	150	125	120
			140	270	1430	1000	190	160	155
1400	1600	1900	80	150	1310	315	70	50	45
			90	160	1330	400	90	60	55
			110	190	1370	500	110	80	75
			120	230	1390	630	130	100	95
			140	270	1430	800	150	125	120
			180	300	1510	1000	190	160	155
			200	350	1550	1250	240	200	195
1600	1800	2200	80	150	1310	315	70	50	45
			90	160	1330	400	90	60	55
			110	190	1370	500	110	80	75
			120	230	1390	630	130	100	95
			140	270	1430	800	150	125	120
			180	300	1510	1000	190	160	155
			200	350	1550	1250	240	200	195
1800	2000	2450	80	150	1310	315	70	50	45
			90	160	1330	400	90	60	55
			110	190	1370	500	110	80	75
			120	230	1390	630	130	100	95
			140	270	1430	800	150	125	120
			180	300	1510	1000	190	160	155
			200	350	1550	1250	240	200	195
			260	460	1670	1400	350	300	295
2000	2200	2700	80	150	1310	315	70	50	45
			90	160	1330	400	90	60	55
			110	190	1370	500	110	80	75
			120	230	1390	630	130	100	95
			140	270	1430	800	150	125	120
			180	300	1510	1000	190	160	155
			200	350	1550	1250	240	200	195
			260	460	1670	1400	350	300	295

Measurements in millimetres



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