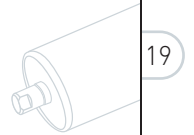


ROLLERS

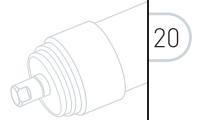
5-25

Metallic Roller RM



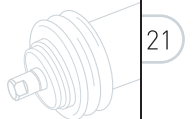
19

Impact Roller RA



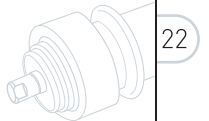
20

Return Roller with discs RLD



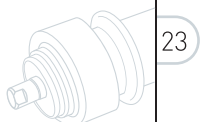
21

Return Roller with 1 flat end RL1T



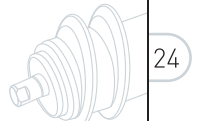
22

Return Roller with 2 flat ends RL2T



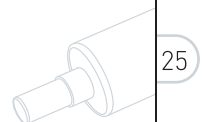
23

Helicoidal Return Roller RLH



24

Guide Roller RGU



25



Introduction

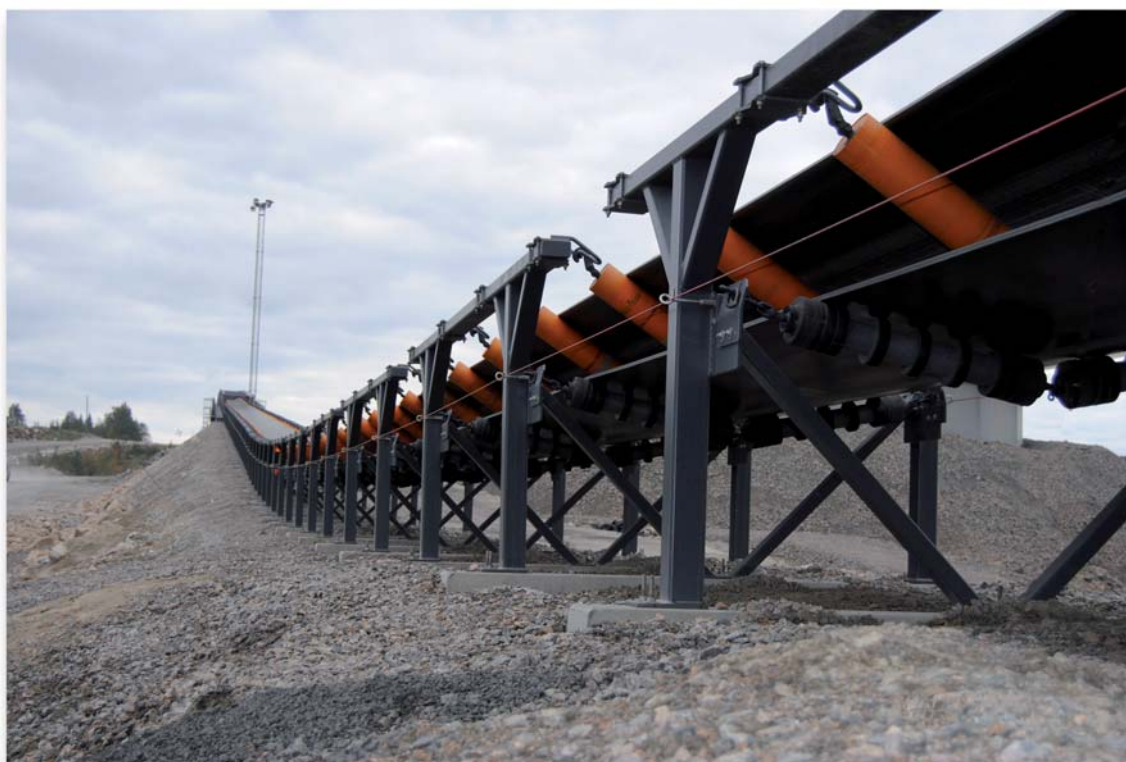
The roller is one of the key components of a conveyor belt. Having optimally operating rollers means that the conveyor will operate as designed.

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.

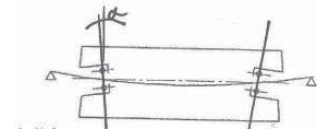
2. Axle made of C15 or C45.
Chamfered ends to facilitate assembly of the bearings. ISO h6 or js6 tolerance between shaft and bearing.

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 .

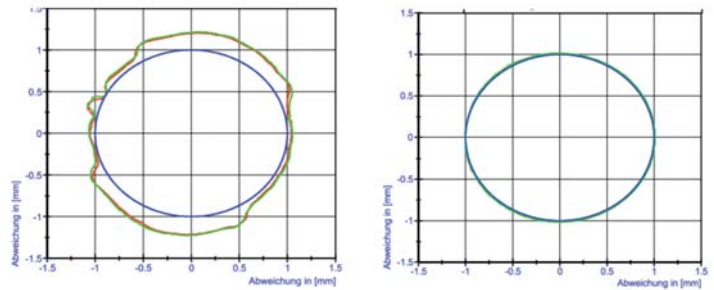
4. Rigid ball bearings. Bearing cage clearance C3/C4. Bearing greased for life.

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.



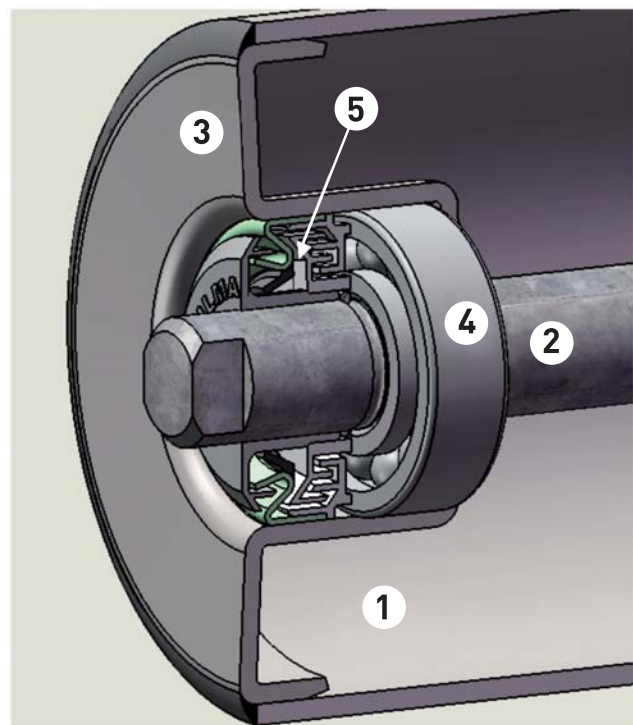
Bearing misalignment (α)



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.

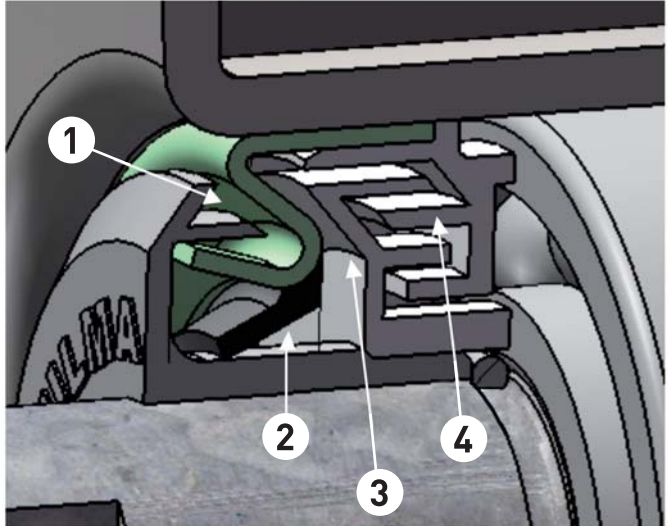
MDA Model

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.

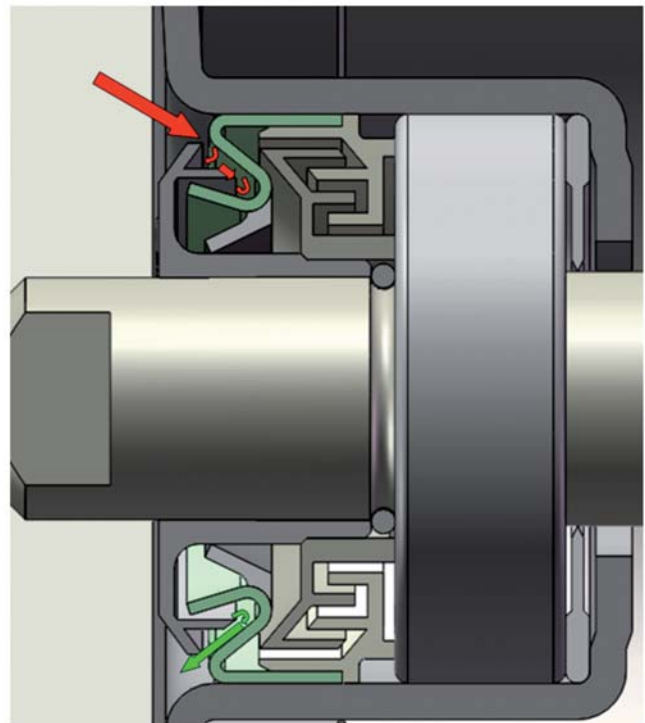
4. Multiple labyrinth design. Designed for the effective release of liquids and solids and to deposit them in the antechamber.



Detail on the MDA model

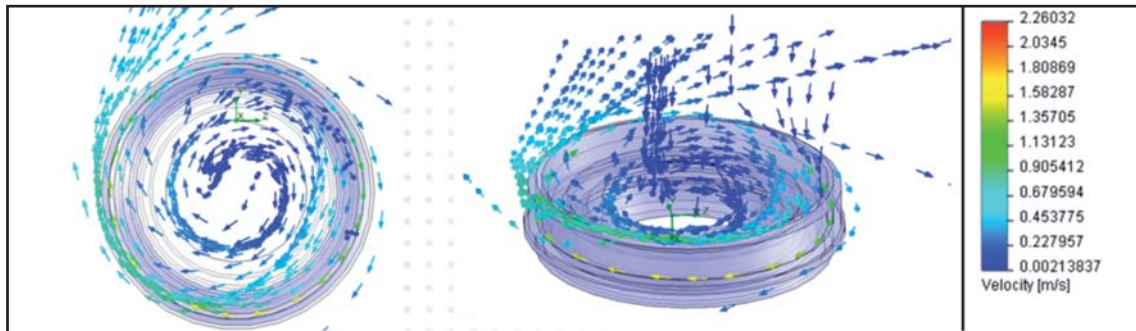
Entry of contaminants

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.

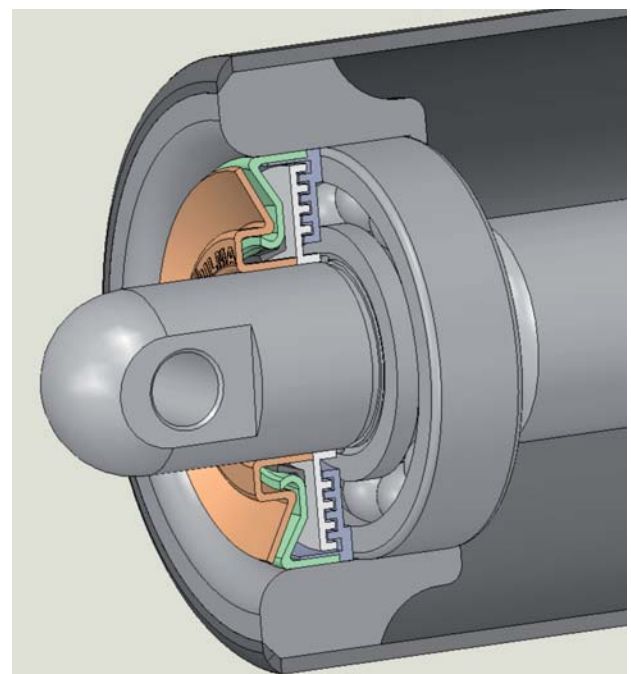
HDA Model

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:

$$K_r = R + L1 \left(G + \frac{Q_r}{3,6 V} \right) F_c \cdot F_i \cdot F_v$$

- Where:
- K_r = Load upon a roller (Kg).
 - R = Weight of rotating parts of the roller (Kg).
 - $L1$ = Space between troughs (m).
 - G = Belt weight (Kg/m).
 - Q_r = Flow of material on the belt (Tn/h).
 - V = Linear velocity of the belt (m/s).
 - F_c = Load factor.
 - F_i = Impact factor.
 - F_v = 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

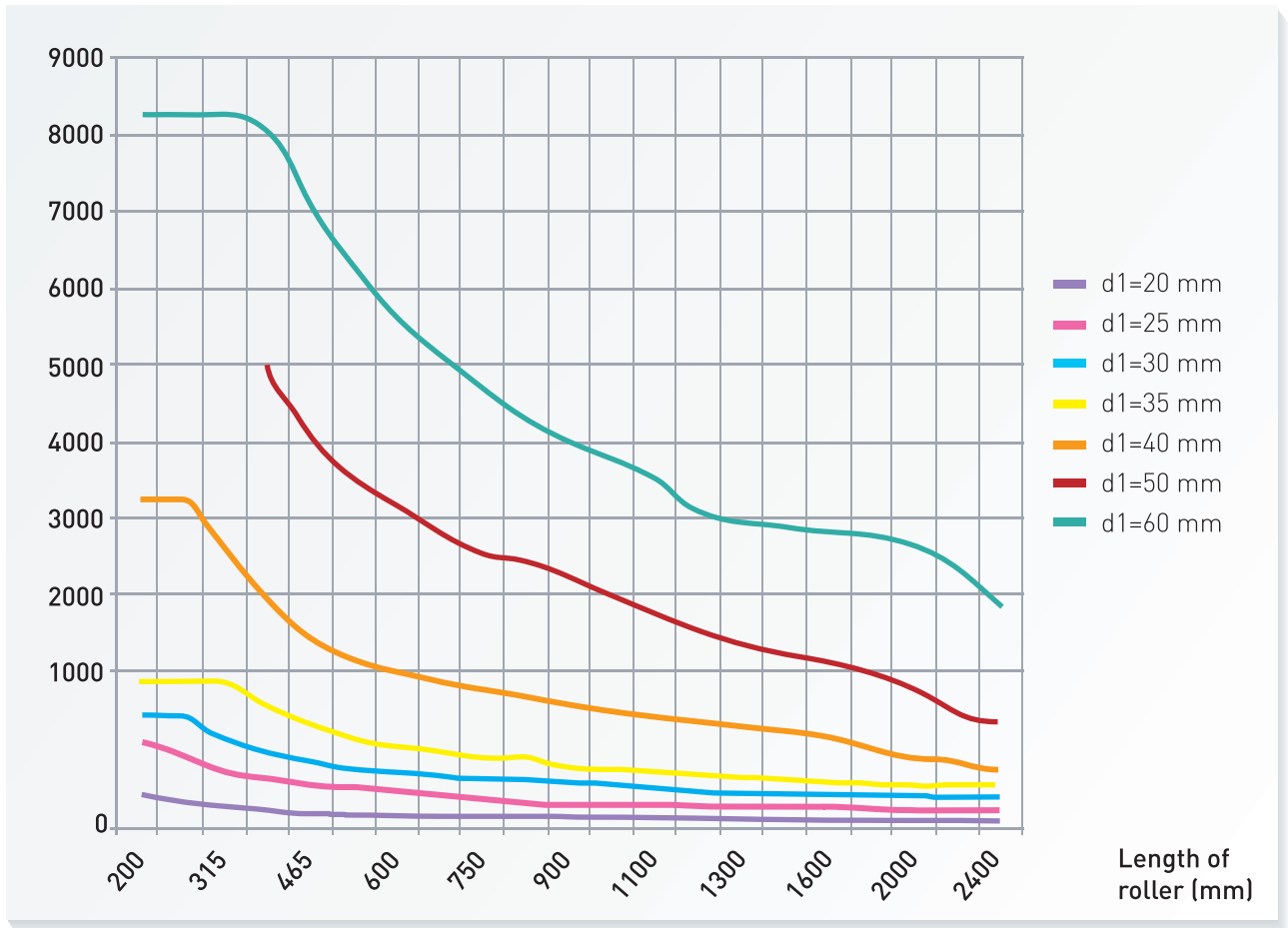
ROLLER LIFE FACTOR (FV)					
Operational hours	10.000	20.000	30.000	40.000	50.000
Fv	0,70	0,87	1	1,10	1,18

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 WIDTH		
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

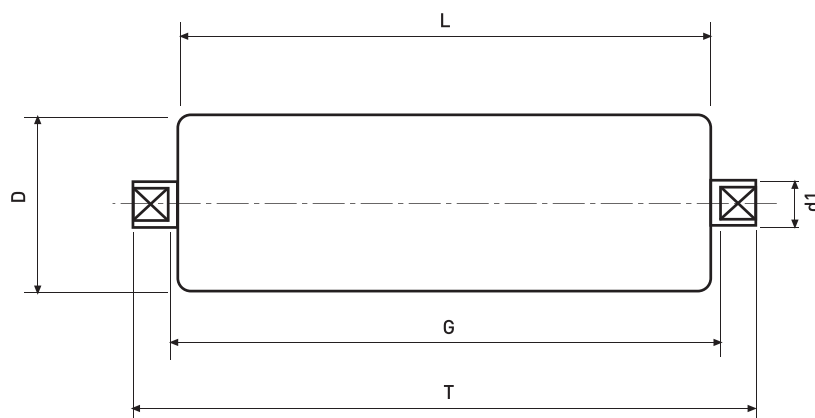


Coated metal roller

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.

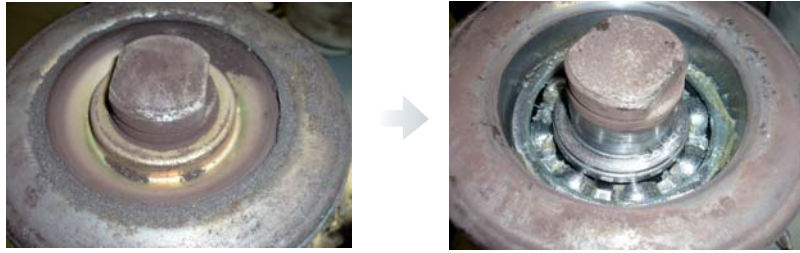
It is also a very suitable roller where load weight is critical, for example in areas with difficult access. It weighs 50% less than a metallic roller of similar dimensions. Its use is common place when metal detectors or magnetic separation is implemented.



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
	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.



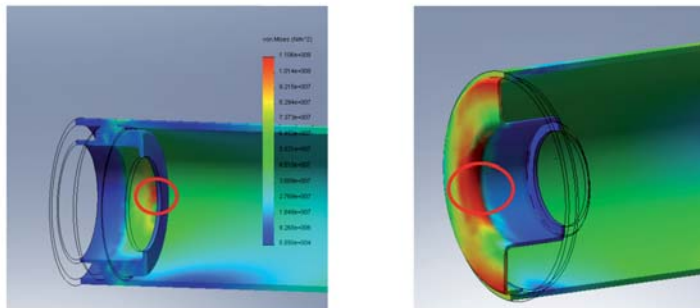
Results from a dust resistance test.



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.



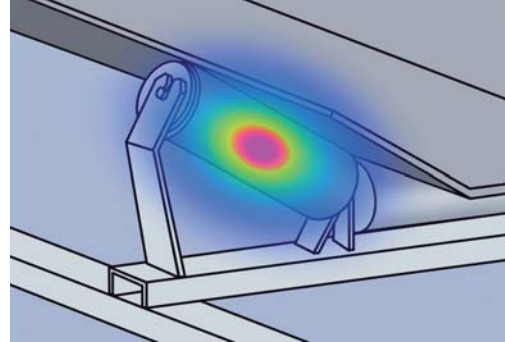
Production methods.

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.

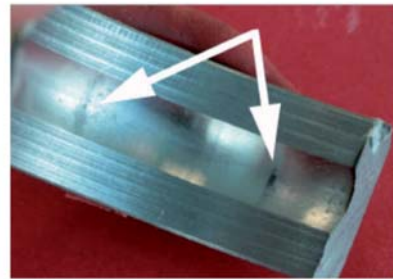
Conveyor ULMA has a low noise roller where the following parameters are carefully controlled:

- 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.

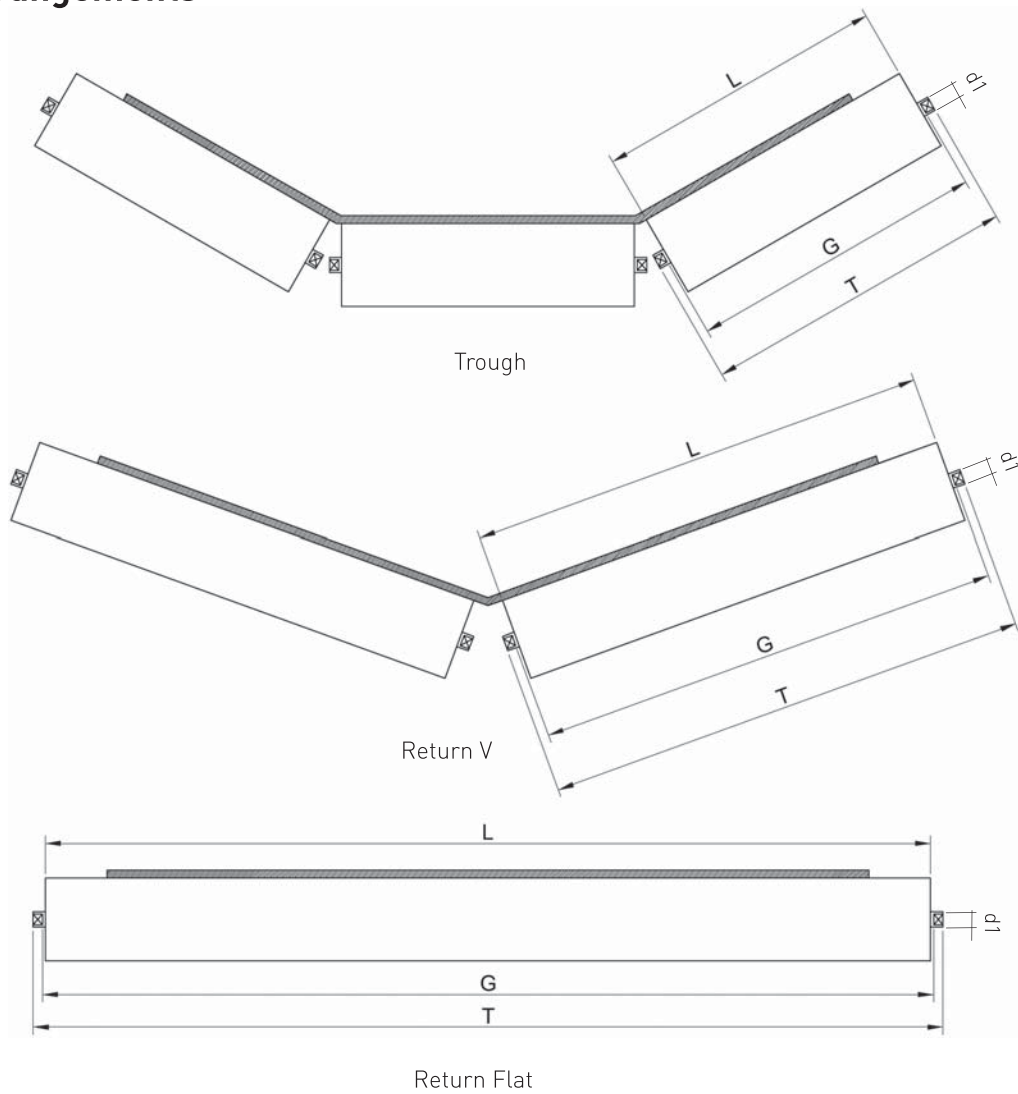
Roller energy consumption control

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

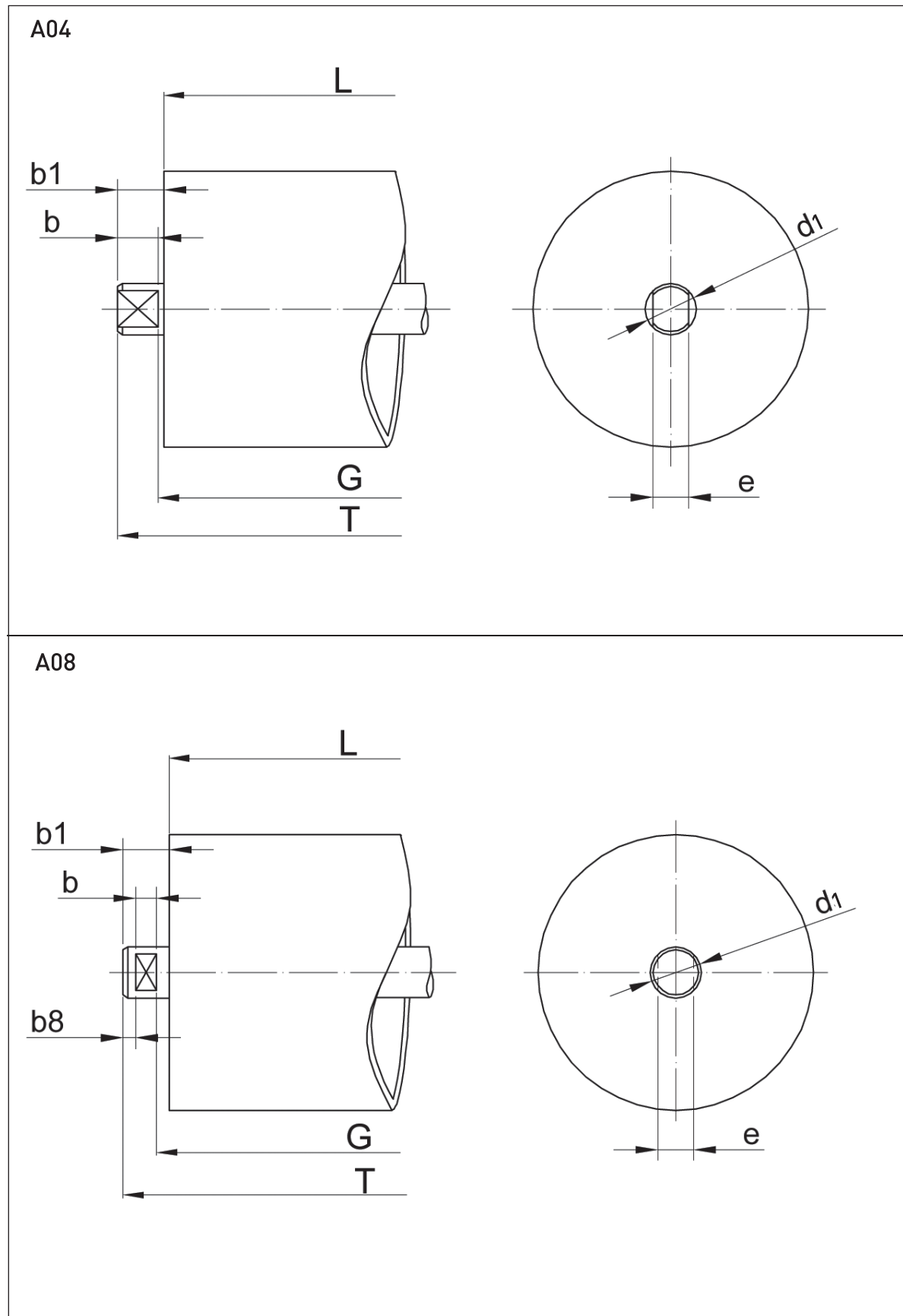
Belt width	3 Rollers				2 Rollers				1 Roller			
	L	G	d1 Ø20 T	d1 > Ø20 T	L	G	d1 Ø20 T	d1 > Ø20 T	L	G	d1 Ø20 T	d1 > Ø20 T
400	160	168	186	192	250	258	276	282	500	508	526	532
500	200	208	226	232	315	323	341	347	600	608	626	632
650	250	258	276	282	380	388	406	412	750	758	776	782
800	315	323	341	347	465	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)

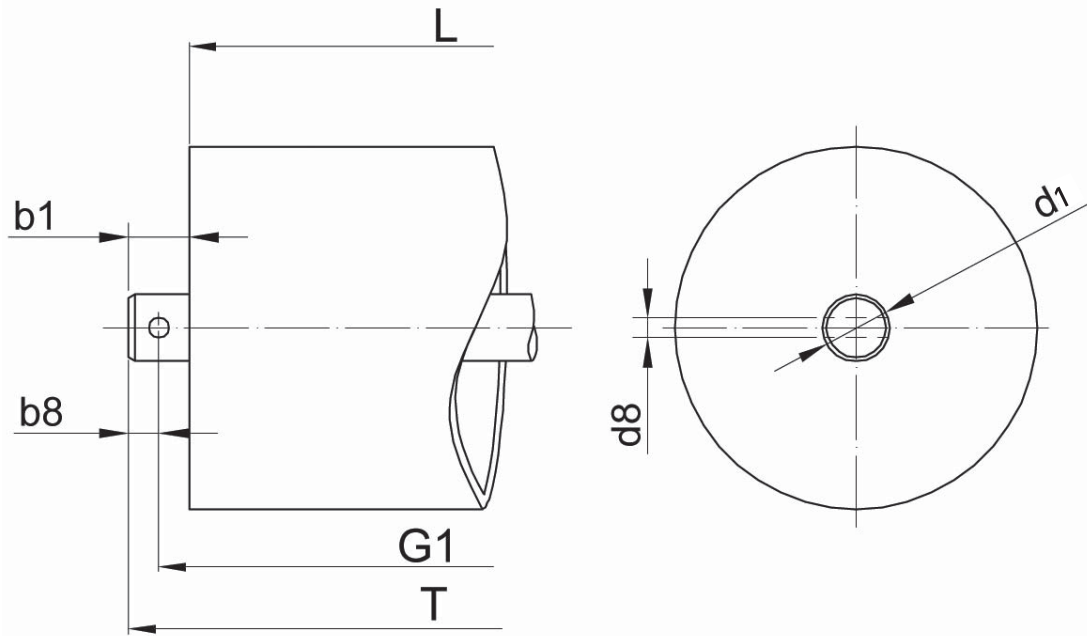
(mm)

(mm)

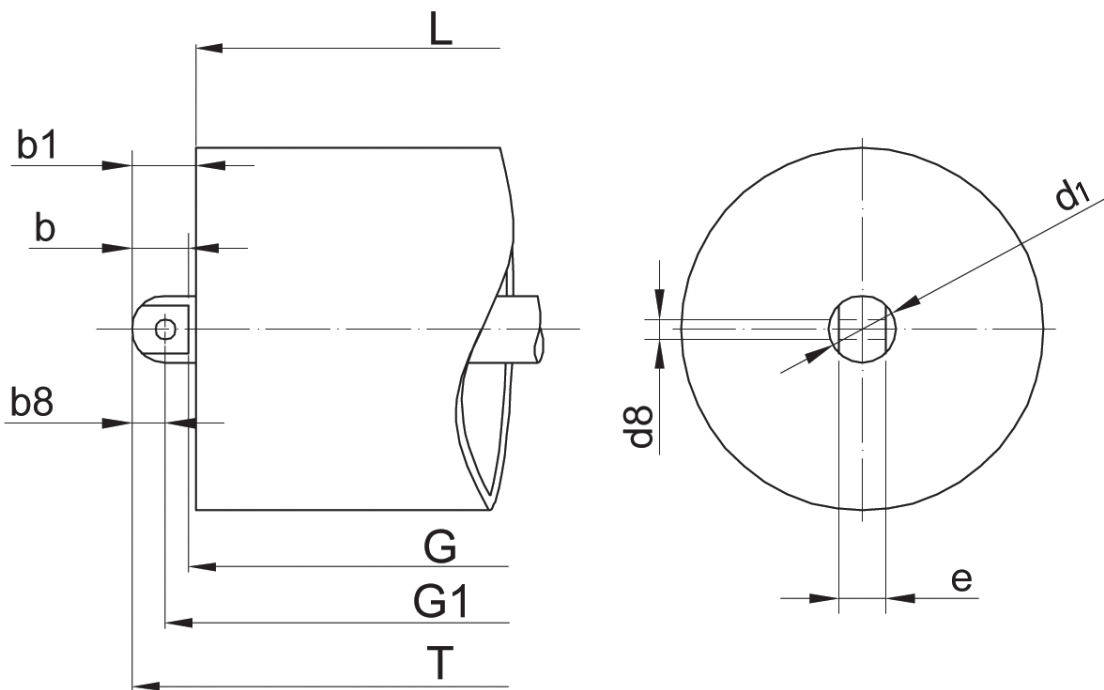
Common axle ends

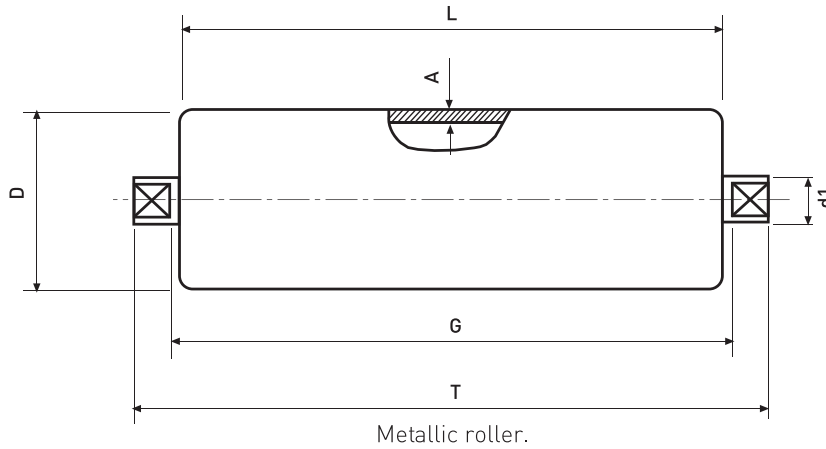


A02



A016





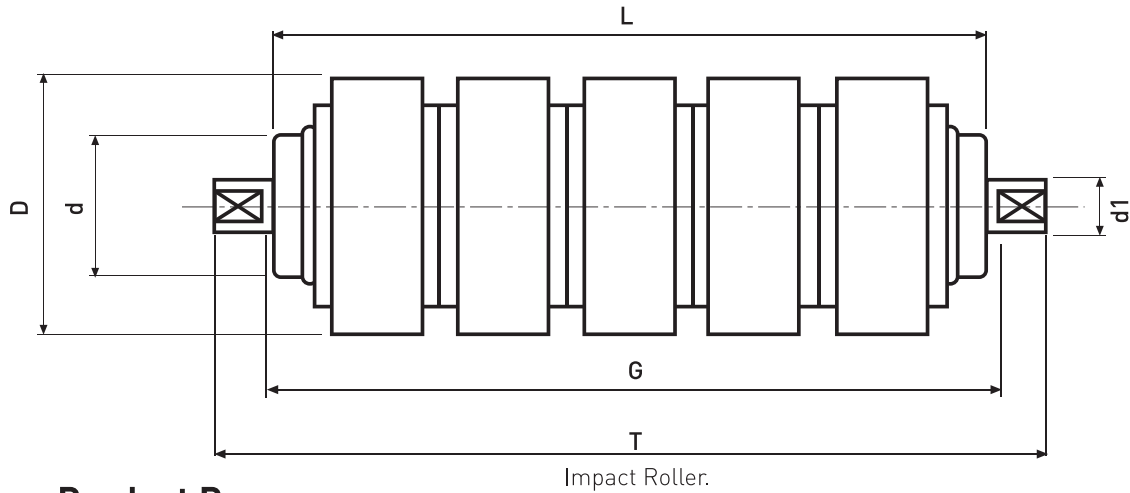
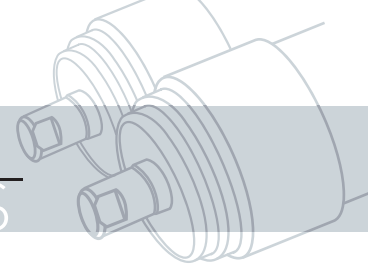
Product Range

	D/A	(D) Tube diameter (mm)										(A) Tube thickness (mm)					
		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
Bearing	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
	25	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	21.9/15.9
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].

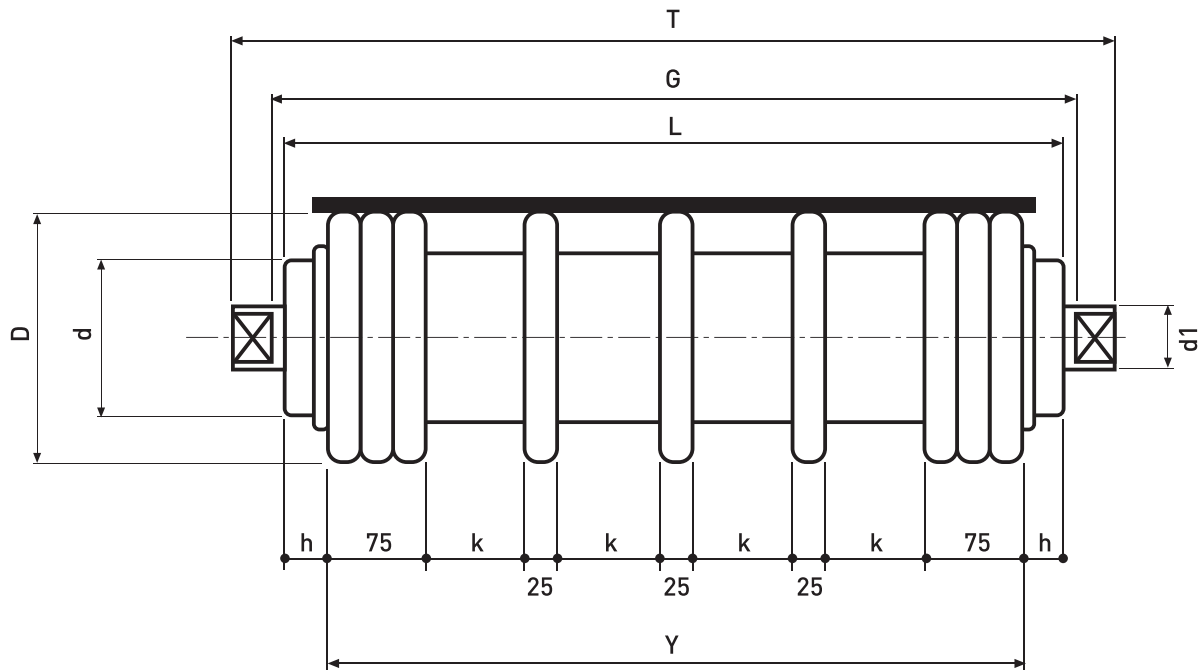
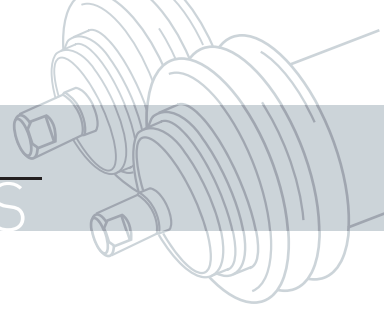


Product Range

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	97/88,3
	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

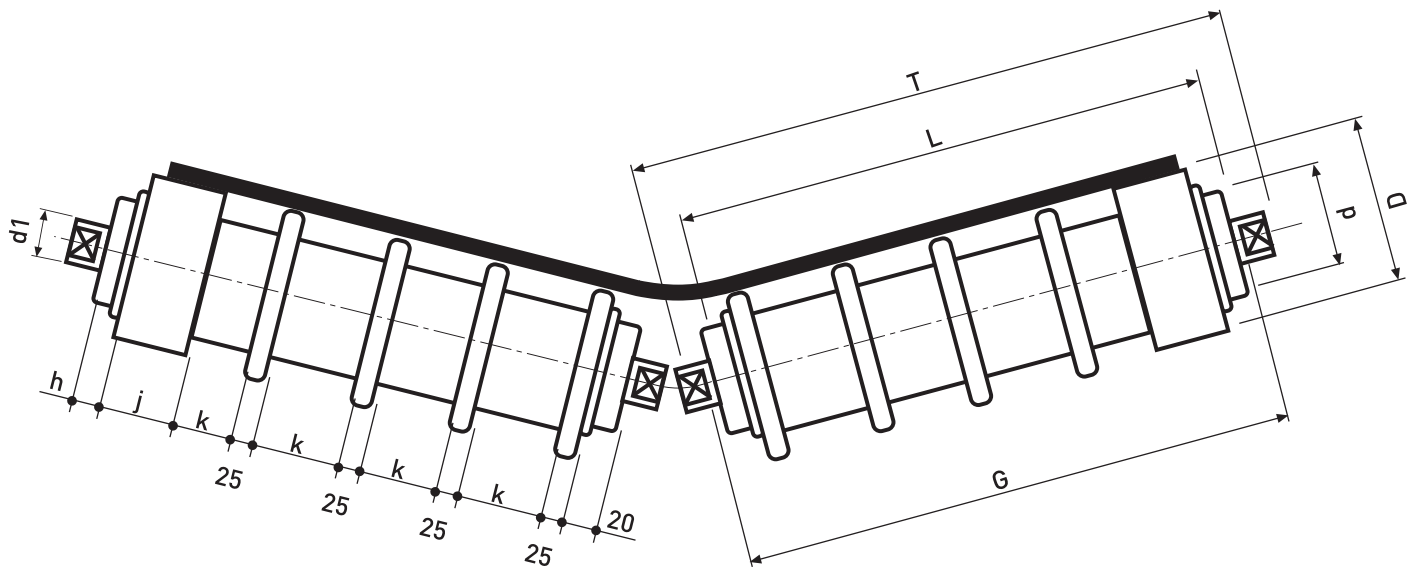
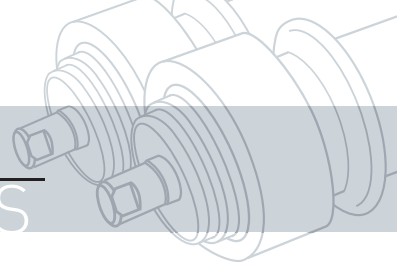
6204	D(mm)	108	108	133	159	133	152			
	d(mm)	63,5	70	70	89	89	89			
6205	D(mm)	133	152	159	180	180	193	180	193	219
	d(mm)	89	89	89	108	108	108	114,3	133	159
6305	D(mm)	133	152	159	159	180	193	180	193	219
	d(mm)	89	89	89	108	108	108	114,3	133	159
6306	D(mm)	133	152	159	159	180	193	180	193	219
	d(mm)	89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

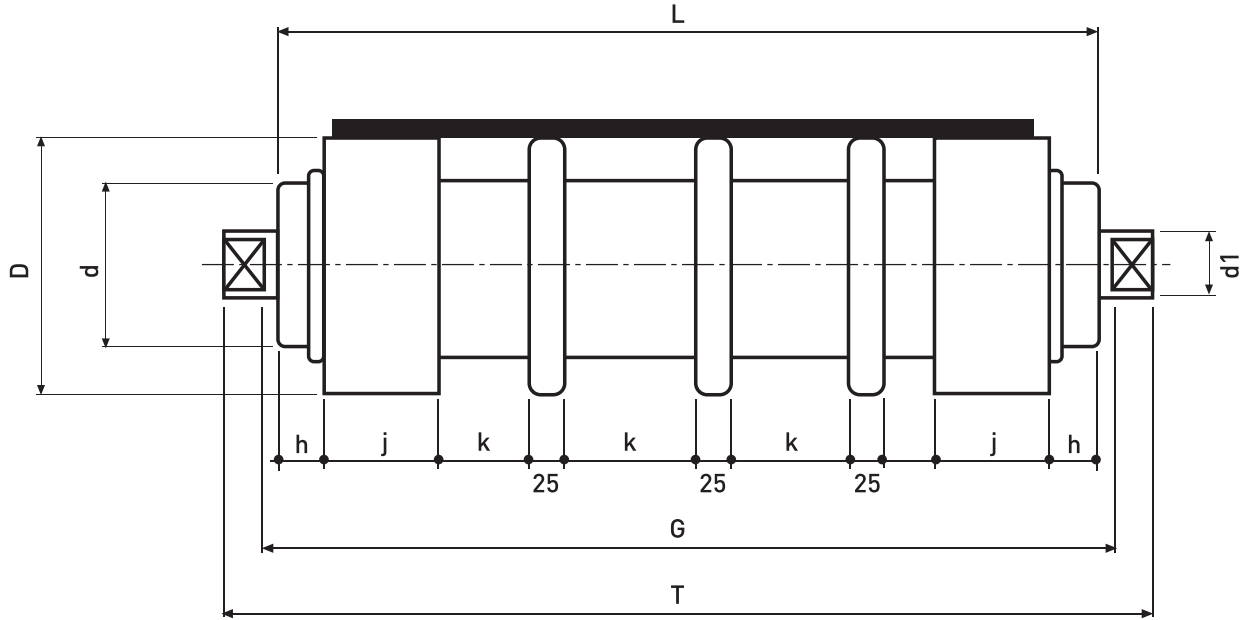
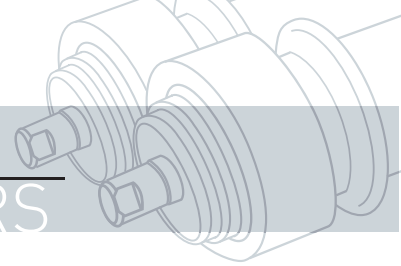
6204	D(mm)	108	108	133	127	133	152			
	d(mm)	63	70	70	89	89	89			
6205	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6305	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6306	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89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

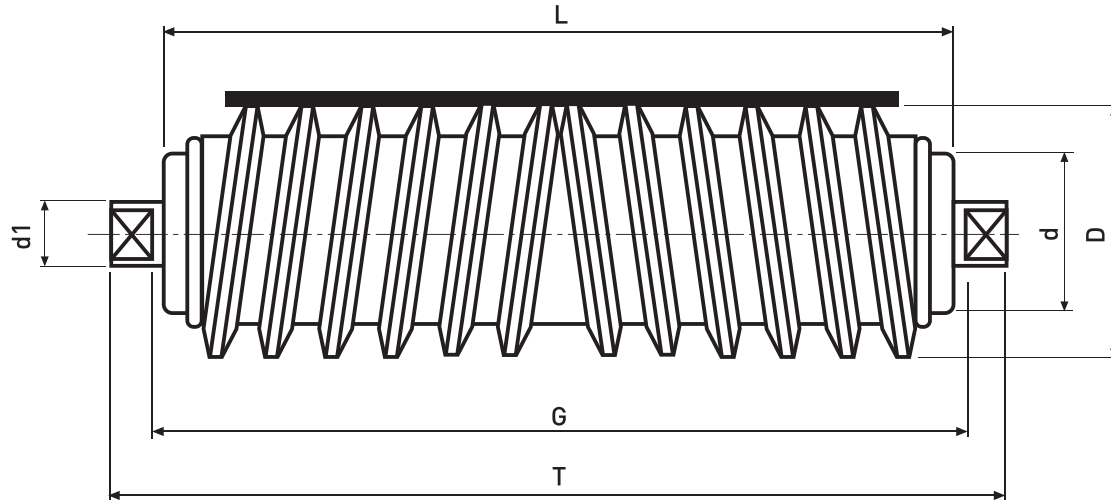
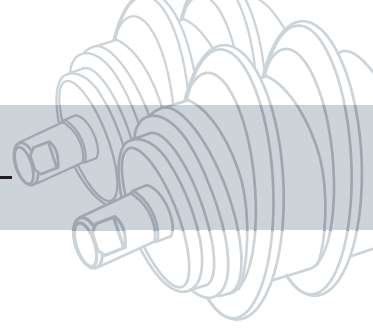
6204	D(mm)	108	108	133	127	133	152			
	d(mm)	63	70	70	89	89	89			
6205	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6305	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89	89	89	108	108	108	114,3	133
6306	D(mm)	127	133	152	159	159	180	193	180	193
	d(mm)	89	89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

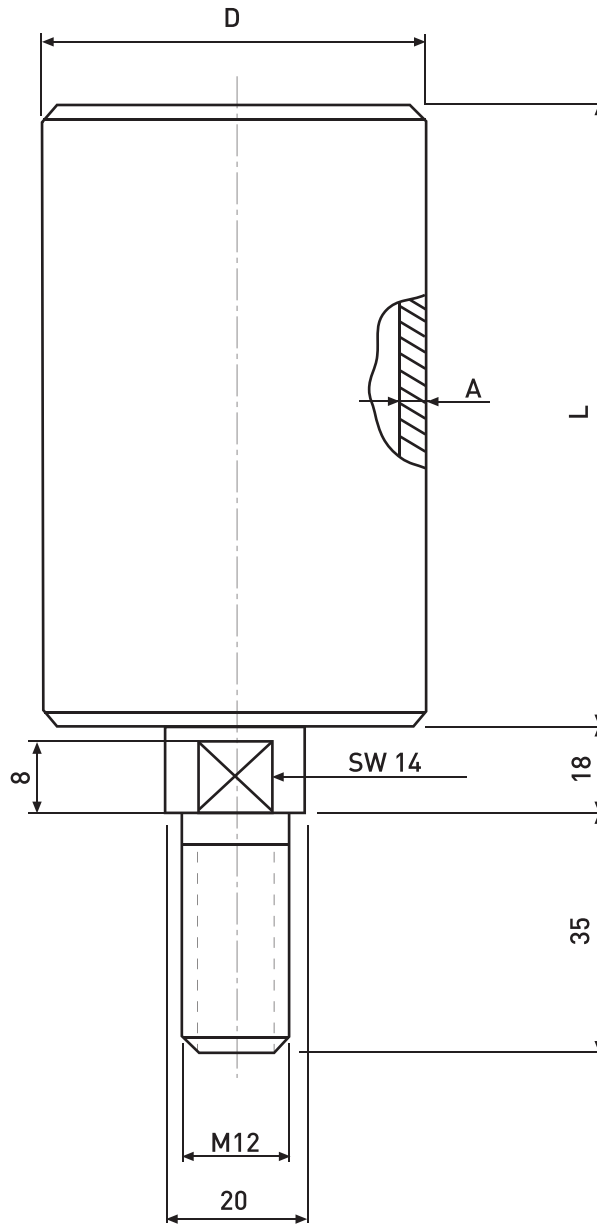
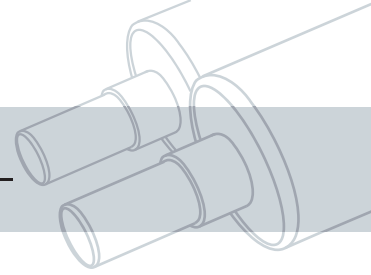
RLH

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	