



RULMECA DRIVE ROLLERS

SERIES: BL3



RULMECA®

MOVING AHEAD

RDR DRIVE ROLLERS SERIES BL3

Rulmeca - Moving ahead.

Since its foundation in 1962, the Rulmeca Group, headquartered in Bergamo (Almè), Italy, has grown to become one of the world's leading manufacturers of premium components for material handling.

With 1200 employees in 9 manufacturing companies and 8 sales companies throughout the world, serving customers in over 85 countries, our core business is manufacturing and supplying quality components for Bulk handling and Unit handling conveyor systems.

Rulmeca is a family owned company with strong international managerial approach. The Rulmeca Group Companies share a common philosophy, each operating to the specific needs of its market. These characteristics, the long-term perspective, and the attention to questions of social responsibility and sustainability are the cornerstones of our work.

Experience garnered over more than 60 years of supplying manufacturers and end users has enabled Rulmeca to create a vast range of components for in-house logistics: Rollers, Drum Motors and 24VDC Drive Rollers.

As a manufacturer who focuses on components, Rulmeca is able to respond flexibly to its customers' needs. Our products contribute to improving the performance and reliability of the machines and systems in which they are installed.

This catalogue is the result of updating and continuously improving our product range.

Do not hesitate to get in touch with us; we welcome your comments and suggestions.

Your Rulmeca Team

info-rdr@rulmeca.com

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A NEW DRIVE ROLLER CONCEPT

Rulmeca is proud to present to the market the wide-ranging RDR series BL3 Drive Roller with an extended selection of related products.

Its excellent value for money makes the RDR BL3 Drive Roller the ideal choice for satisfying even the most demanding of clients.

Ideal in applications which require:

- Low, medium or high speeds which are either set or varied by the client
- Constant high torque throughout the speed range
- Frequent stop/start cycles
- Optimised working consumption
- Low levels of system noise
- Safety for line operators

Rulmeca Drive Rollers (RDR) are designed to play a key role in industrial applications in which roller transportation is an important part of the production process.

According to the characteristics of the items to be conveyed, the overall configuration of the system and environmental conditions, it is possible to configure the Drive Roller in complete safety and with the utmost efficiency.

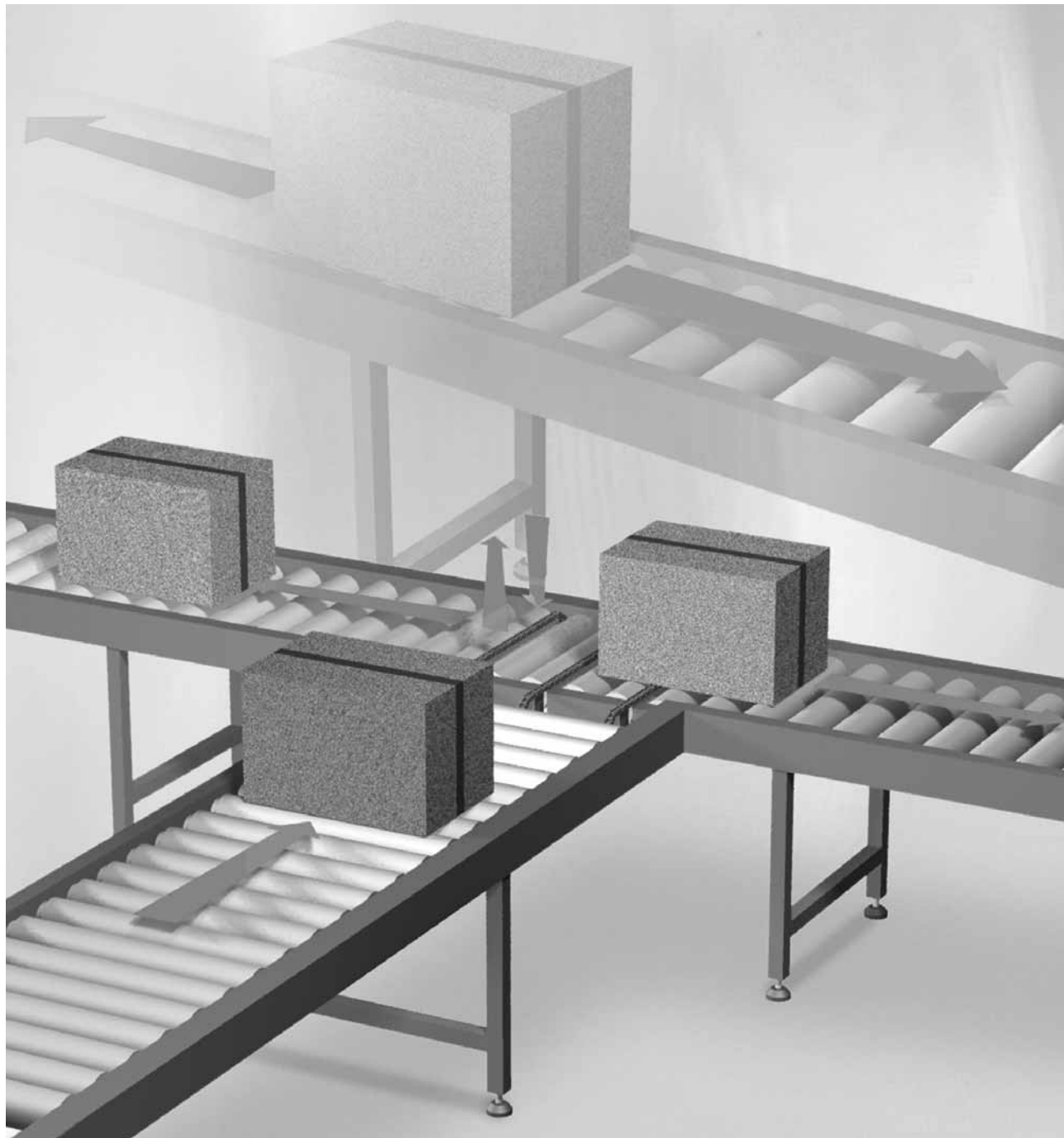
As well as being classified as an electrically-safe system as it is powered by 24V DC, the Drive Roller is an extremely silent, compact, efficient and long-lasting solution which does not require maintenance of its functional parts.

The motor unit, the technological heart of the Drive Roller, is - in the standard set-up proposed - fitted inside a 50 mm Ø tube with the finish agreed with the client.

In order to select the right gear reduction ratio, thus defining the rotation speed and the available torque, it is necessary to take into consideration the weight, size, material and base profile of the items to be conveyed, as well as the desired transportation speed and the working dynamics of the conveyor.

Please contact Rulli Rulmeca S.p.A. for any further information regarding the correct configuration of the Drive Roller and of all the relative components.

www.rulmeca.com



GENERAL STANDARDS

The elements that determine the initial design of a roller conveyor are:

- The dimensions of the packages to be conveyed (x-y).
- The condition of the support base of the packages in contact with the rollers.
- The weight and number of packages to be conveyed for each sector driven by the single Drive Roller.
- The transfer speed.

Roller pitch (or distance between rollers).

For efficient transfer of the packages on a roller conveyor it is good practice for the packages to have a sufficiently rigid and flat contact surface (so-called "rollable") that at the same time provides good friction.

"Roller pitch" is defined as the distance between the rotation axes of two adjacent rollers (l).

For operating efficiency, we recommend choosing the roller pitch that is suitable for the minimum dimensions of the package to be conveyed. As a general rule, the conveyed package must always be supported by at least 3 rollers simultaneously (i.e. $l \leq \text{minimum length of package divided by } 3$).

In all cases it is preferable to provide a number of support rollers that are greater than 3 to reduce the distance between rollers.

In this way, smoother conveying is obtained, especially if the surface is deformable or typically rigid, but not continuous and in order to avoid jams if the packages have protrusions, or if the load is not well distributed or evenly balanced inside the package.

It could be more economical to use a greater number of light rollers rather than a smaller number of medium or heavy rollers.

The system designer is still responsible for checking that the maximum load exerted by the packages on the individual rollers and Drive Rollers is lower than their maximum load capacity specified in the catalogue.

Warning: to calculate the load that can be placed on a single roller, the number of rollers on which the load is considered to be distributed must be only 2/3 of the rollers below the package because the irregular assembly height and surface of the packages and the eccentricity and ovality tolerances of the rollers mean that not all the rollers are in contact at the same time.

Friction coefficient

The revolving friction coefficient between the package and roller plays an important part in conveying packages on a roller conveyor, as it enables the tangential force to be calculated that is necessary to move the packages forwards on the rollers.

This friction coefficient varies according to the material of which the package that is in contact with the rollers is made.

Refer to the following values:

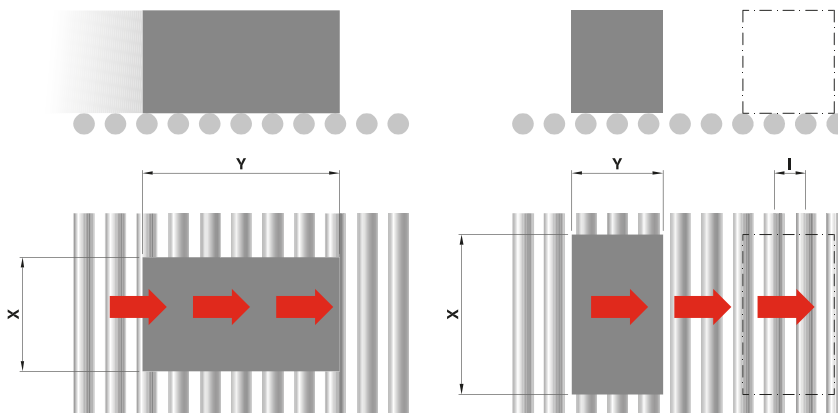
Steel	→ 0.03
Smooth PVC	→ 0.04
Profiled polymer	→ 0.05
Wood	→ 0.05
Stiff cardboard	→ 0.06
Soft cardboard	→ 0.08

Stiff materials (of the same weight) require less tangential force (and thus drive torque) to be moved.

Soft packages tend to sag between one roller and the other, requiring more tangential force to be moved.



In order to prevent or limit sagging of the packages between the rollers, ensure that the roller pitch is as close together as possible if the type of conveyed package cannot be changed.



LOAD ON ROLLERS

Each type of roller proposed by Rulmeca is characterized by a nominal capacity value. Refer to the roller section or to the "Rollers for internal conveying" catalogue. It is defined as:

- P1 = Nominal load pressing down on a roller [daN]
- Pc = Load capacity of a roller or capacity [daN]
- Pr = Weight of the rotating parts of a roller [daN]
- Pt = Total weight of a roller [daN]
- Pu = Weight of a package [daN]
- n = Number of rollers

The distribution of the load on the rollers can not be extrapolated from its average value.

$$P_1 = \frac{P_u}{n}$$

It must be established whether: $n > 3$ or $n > 3$ but with package surface NOT extremely rigid.

$$P = \frac{3 \cdot P_u}{2 \cdot n}$$

If $n > 3$ with extremely rigid package surface.

$$P = \frac{2 \cdot P_u}{n}$$

The camber values of loads of the same weight increase or decrease according to how the load is distributed.

In general, the smaller the surface of the concentrated load that comes into contact with the roller, the greater the stress brought to bear on the roller.

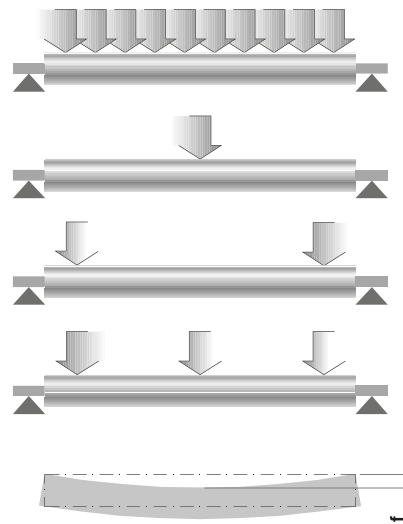


Fig. 1 evenly distributed load

Fig. 2 load concentrated in centre

Fig. 3 load concentrated at ends

Fig. 4 load concentrated at 3 points (50% in the centre)

Fig. 5 f = camber of the tube bearing a load.

When choosing the type of roller, remember:

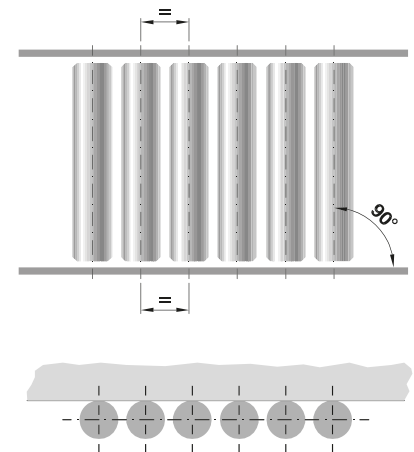
$$P_c \geq P$$

Check the roller's suitability for the environmental conditions (dust, humidity, corrosion, hygiene, etc.) and whether the thickness of the tube will withstand shocks and concentrated loads. Evaluate whether increasing the diameter of the roller (tapered rollers or rubber-lagged rollers), having rollers of the same type, reduces tangential force and increases peripheral speed.

PARALLELISM - ORTHOGONALITY - ALIGNMENT

Attention must be paid to these three factors. They are necessary and indispensable conditions for the operating efficiency of any type of roller conveyor; if they are not fulfilled with minimum processing tolerances, this could give rise to conveying and flow problems.

If particular applications involve the use of rollers tilted forwards or rollers in a double herringbone pattern, align packages on reference points to centre them or direct them to priority aisles by means of guides. Refer to the Rollers for internal conveying catalogue.



CHOOSING YOUR DRIVE ROLLER

The conveyed material moves perpendicularly to the axis of the roller, so when calculating the necessary forces, the revolving friction of the roller with the surface of the base of the conveyed package must be taken into account.

Apply this formula to define the tangential force necessary for handling the package:

$$F_t = P \times G \times U$$

where:

Ft) required tangential force [N]

P) Weight of the package (kg).

G) Gravity acceleration = 9.81 [m/s²]

U) Friction coefficient.

Once the tangential force that is necessary to move the package has been determined, after the package conveying speed is known, refer to the tables for the single Drive Rollers to define the most suitable reduction ratio.

Example:

Weight of the conveyed material: 30 kg

PVC package

Conveying speed: 0.5 m/s

$$F_t = 30 \text{ kg} \times 9.81 \text{ m/s}^2 \times 0.04 = 11.7 \text{ N}$$

If you also need to know the torque required, consider the radius of the Drive Roller (equal to 25 mm = 0.025 m). Torque (force x radius) is:

$$11.7 \text{ N} \times 0.025 \text{ m} = 0.3 \text{ Nm}$$

The necessary mechanical power (W) (Tangential Force x Speed) will be:

$$11.7 \text{ N} \times 0.5 \text{ m/s} = 5.9 \text{ W.}$$

Remember that this calculation does not take account of possible force absorption by belts or other transmission systems used to drive the driven rollers.

In addition to making this calculation, the result should be oversized with a suitable safety coefficient due to possible conveying irregularities or frictions (guides, alignments, rubber laggings, etc).

When choosing the Drive Roller, in addition to the above data, you must consider the

type of use, average service life required and the electronic functions required to run the system.

You should always contact Rulli Rulmeca S.p.A. in order to check the calculations made and choose the correct Drive Roller before placing the order.


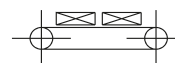
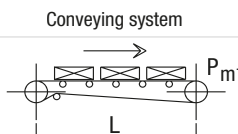
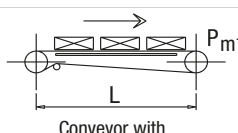
General logistics

The Drive Roller can also be easily used in small conveyor belts that can convey light loads and which have flexible belts that are not over tensioned.

Typical applications are those in which compact design solutions are required, as is the case in the electronics, pharmaceutical, and automotive industries, injection moulding of plastic parts or manufacturing in general.

You are advised to use the Drive Roller with the shell machined for belt centring together with elastic or mono-ply fabric belts that do not require tension higher than the minimum value between static and dynamic capacity of the Drive Roller. See dedicated chapter on page. 20. See the following pages for possible types of transmission roller.

CALCULATING TANGENTIAL FORCE

		
	Force without load	Force for conveying materials horizontally
 Conveying system Conveyor with roller surface	$F_0 = 0.4 \cdot L \cdot (2P_n + P_{pr})$	$F_1 = 0.4 \cdot L \cdot P_{m1}$
 Conveyor with sliding surface	$F_0 = 11 \cdot L \cdot P_n \cdot C_2$	$F_1 = 11 \cdot L \cdot P_{m1} \cdot C_2$

F = Tangential force [N]. $F = F_0 + F_1 + F_2 + F_3$. The tangential forces are shown in the performance tables.

P_n = Belt weight in kg [kg/m].

P_{pr} = Weight of the rotating parts of the conveyor belt (forward and return travel section) [kg/m].

P_{m1} = Weight of the product conveyed on the forward travel section for each metre of length of the conveyor belt [kg/m].

C_2 = coefficient of friction between the underside of the belt and its sliding surface.

L = Length of the conveyor in metres (distance between drive roller/ transmission) [m].

$F_0 - F_1$ = Force [N].

C2	Friction coefficient		
	PE belt	PP belt	POM belt
Sliding surface	0.30	0.15	0.10
Sliding surface made of steel or stainless steel	0.15	0.25	0.20

MOTION TRANSMISSION

Transmitting motion from drive roller to neighbouring rollers

A conveyor with controlled rollers can be built using Drive Rollers with grooves or pulleys connected to idler rollers using the same motion transmission system (driven rollers).

Conveyors configured as motorized

This system involves the Drive Roller and rollers configured as motorized with O-Rings or Poly-V belts.

The BL3 configured as motorized configuration, foresees the direct and continuous junction between the tube and the motion transmission plastic head.

The conveyor configured as motorized consists of more zones independent from each other moved by a single Drive Roller.

The number of the stations is variable depending on the logic handling, from the type of good to be conveyed (weight and size) and the Drive Roller gear ratio that will define the linear speed and available torque.

The motion transmission is direct allowing maximum control of goods handling cycles. The handling packages sequence is assured by manual controls, PLC or electronic Zero Pressure Accumulation management modules. The conveyors configured as motorized excludes the contact between the packages and allows to determine the crossing times, but it is not suitable for totally fulfil the conveyor spaces, especially if the length of the packages is not constant.

Conveyors configured as frictioned

It is worth mentioning the **friction roller conveyors**, used in those applications that involve the accumulation with contact of the transported packages. These roller conveyors have **continuous operation** as their basic logic (which allows the accumulation of packages) which **is not compatible** with the type of use for which the RDR-BL3 Drive Roller was designed, for which **the only type of permitted operating cycle is the discontinuous S3 one**.

Chain loop transmission

For heavy loads and low speeds, it is possible to connect the Drive Roller to adjacent driven rollers via chain links. The double crown plastic sprockets are $\frac{1}{2}$ " Z=14. This motion transmission mode guarantees total

movement synchronization and identical speed of all the rollers connected to each other.

Belt transmission

To connect the drive roller to the idler roller with grooves or pulleys, use round polyurethane belts (easily available on the market).

The extent and pretensioning of the round belts depend on the conveyed load and on the roller pitch specified in the design phase. Generally, the pretensioning recommended by round belt manufacturers should not be less than 8%. This value must always be requested from and confirmed by the supplier of the belts because it depends on the type of material used.

Warning: each idler roller driven by belts causes a tangential force loss (Ft) of about 1N. When calculating the load that can be conveyed by every single Drive Roller, this force must be subtracted from the tangential force, which is supplied by the Drive Roller and is shown in the drive roller performance tables. In order to ensure uniform traction and correct conveying of the packages, do not exceed 5 + 5 idler rollers driven by belts by each Drive Roller (which must be placed in a central position).

Transmission of motion to the driven rollers by round belts is advisable for speeds up to 0.6 m/s and for packages weighing up to 40 daN. To ensure a precise package arrest, make sure that the package to be arrested is always positioned on the drive roller during the slowing phase and not exclusively on the rollers driven by belts.

Poly-V belt transmission

Using the transmission system with Poly-V belts is the most efficient method to transmit motion to the driven rollers next to the Drive Roller. Owing to the elasticity that characterizes the belts that can be supplied by Rulmeca, it is possible to apply this technology not only to rectilinear section but also to conveyors with curves in combination with the Drive Rollers and tapered rollers in the KRO version. The high efficiency of the Poly-V belt transmission system enables more torque to be transmitted to the driven rollers than is the case with the round belts system, thus increasing the number of rollers that can be

driven by the same Drive Roller.

Owing to the great precision of the pulley-belt combination, conveyors can be designed for many different productive applications requiring immediate accurate stops and starts, but with no risk of slipping.

Maintaining the Drive Rollers together, for conveyors on slopes, is assured because belts with up to 4 ribs can be used for heavier loads, whilst still providing a spacing groove between two belts.

Most of the applications can be implemented by 2-rib belts (for conveyed weights not exceeding 50 daN).

The compactness of the pulleys enables more useable surface area to be obtained on the Drive Roller/roller and enables the transmission to be easier guarded to prevent damage, also resulting in a narrower roller conveyor.

In order to ensure uniform traction and correct conveying of the packages, do not exceed 10 + 10 idler rollers driven by Poly-V belts by each Drive Roller (which must be placed in a central position). For low-load applications, with several driven rollers, always get Rulmeca to check and approve the transmission.

Poly-V belts can transmit motion to the driven rollers at speeds up to 1.25 m/s, for loads limited by the torque that can be supplied by the Drive Rollers and by the torque that can be actually transmitted by the belts after the speed loss caused by transmission slips.

Poly-V belt characteristics

- Poly-V belt ISO9982 (DIN7867) with PJ profile with 2 or 3 ribs (or 4 ribs by request).
- In accordance with Directive 2002/95/EC (RoHS).
- All the materials used have been tested and registered in compliance with the REACH Directive (EC 1907/2006).
- The belt does not contain halogens, silicone compounds or PVC.
- UL certified.
- Surface hardness 82 Shore A, ribs hardness 55 Shore A.
- Pretensioning before use 4-6 %.
- Electrical conductivity < 7 MΩ.
- Temperature range -20 to +90 °C.
- Belts for low-temperature environments can be used (please specify in order).

POLY-V BELTS TABLE

For packages around and above 50 daN, 3-rib belts should be used.

The optimum pretensioning for belts supplied by Rulmeca is obtained by complying with the roller pitches prescribed in the table

below for the different belt lengths.

Transmission is calculated on the basis of the performance guaranteed by the manufacturer of the belts used.

Poly-V belts are available immediately from

stock for the most common standard pitches indicated in the table below in the catalogue. If you have any queries at all, contact Rulmeca.

FLEXIBLE POLY-V BELTS 2 OR 3 RIBS PITCH 2.34 – J PROFILE ISO 9982 DIN 7867

Std.	Ordering codes		Description		Roller pitch with pulley Ø43	Released belt length
			Ribs N°	Ref. nr. on belt		
*	BELT-2PJ-60	Poly-V belts	2	PJ 256	60-63	252,5
*	BELT-3PJ-60		3	PJ 256	60-63	252,5
	BELT-2PJ-68		2	PJ 270	65-68	259,8
	BELT-3PJ-68		3	PJ 270	65-68	259,8
	BELT-2PJ-73		2	PJ 282	71-73	274
	BELT-3PJ-73		3	PJ 282	71-73	274
*	BELT-2PJ-75		2	PJ 286	74-75	276
*	BELT-3PJ-75		3	PJ 286	74-75	276
*	BELT-2PJ-78		2	PJ 288	76-78	280,1
*	BELT-3PJ-78		3	PJ 288	76-78	280,1
*	BELT-2PJ-80		2	PJ 290	79-80	284,5
*	BELT-3PJ-80		3	PJ 290	79-80	284,5
	BELT-2PJ-90		2	PJ 314	88-91	306
	BELT-3PJ-90		3	PJ 314	88-91	306
	BELT-2PJ-94		2	PJ 316	92-95	313,5
	BELT-3PJ-94		3	PJ 316	92-95	313,5
*	BELT-2PJ-100		2	PJ 336	98-102	325,5
*	BELT-3PJ-100		3	PJ 336	98-102	325,5
	BELT-2PJ-105		2	PJ 346	104-107	336,6
*	BELT-3PJ-105		3	PJ 346	104-107	336,6
	BELT-2PJ-110		2	PJ 348	108-110	342
	BELT-3PJ-110		3	PJ 348	108-110	342
*	BELT-2PJ-120		2	PJ 376	119-122	363,1
*	BELT-3PJ-120		3	PJ 376	119-122	363,1
	BELT-2PJ-125		2	PJ 388	124-128	376
	BELT-3PJ-125		3	PJ 388	124-128	376
	BELT-2PJ-133		2	PJ 416	131-135	388
*	BELT-3PJ-133		3	PJ 416	131-135	388
	BELT-2PJ-153		2	PJ 442	152-156	429
	BELT-3PJ-153		3	PJ 442	152-156	429
*	BELT-2PJ-160		2	PJ 456	157-161	438,5
*	BELT-3PJ-160		3	PJ 456	157-161	438,5
	BELT-2PJ-175		2	PJ 486	171-176	466
	BELT-3PJ-175		3	PJ 486	171-176	466
*	BELT-2PJ-200		2	PJ 536	197-202	515
	BELT-3PJ-200		3	PJ 536	197-202	515

* Standard belts. For different measures ask for availability.

Warning: the order code does not give the roller pitch. For permitted roller pitches, see the relevant column.

Warning: the printed reference number on the belt (PJ-XXX) is not the extent and must not be used to calculate roller pitch.

The original winding diameter of the belt is calculated as 1 mm above the pulley: $D_p = \varnothing \text{ pulley} + 2 \text{ mm}$.

Recommended average tension 5%. Min/max permitted tension range 4-6%.



THE RDR DRIVE ROLLER

The Drive Roller can support both a load acting directly on it (a portion of the weight of the package pressing down on the Drive Roller and/or the load due to the tension of the conveyor belt), and convey loads distributed on the roller conveyor portion driven by the Drive Roller.

Load capacity

The load capacity (P_c) of the drive roller varies depending on the configuration chosen and its length. See dedicated chapter on page. 20.

Conveyable loads

The total load that can be conveyed by the rollers driven by a single Drive Roller can be extrapolated from the torque/tangential force supplied by the motor with the different gear ratios, at the different speeds. To select the reduction ratio, refer to the drive roller's speed/tangential force tables and to the calculation of tangential necessary force previously explained in this catalogue. In order to increase the service life of the motors, decrease ambient noise and reduce energy consumption, it is very important to operate the Drive Rollers only when there is a package to be conveyed and to stop them (by photocells, timers, relays and/or PLC) as soon as the package has passed.

Electrical protection

USING THE DRIVE ROLLER WITH BL3 MOTION CONTROL BOARD

The Drive Rollers of the BL3 series are normally supplied with the BL3 Motion Control interface. This board not only provides an appropriate power safety fuse to protect the Drive Roller but also provides a system of opto-isolation of I/O signals that ensures that the system is protected from voltage spikes and disturbs.

USING THE DRIVE ROLLER WITHOUT BL3 MOTION CONTROL BOARD

If the customer wishes to use the Drive Roller without the BL3 Motion Control board, it is the customer's responsibility to protect every single motor with a safety fast fuse that is appropriate to the nominal current of the Drive Roller (see the technical data set out below). In general, in order to maximize

the service life of the Drive Roller and avoid malfunctions or faults, use well filtered power supply units with regulated voltage and filter correctly the inductive loads supplied by the same power line (solenoid valves, remote switches, coils etc.).

Contact Rulmeca for information and always refer to the Product Technical Manual that can be downloaded from <http://rdr.rulmeca.com>.

Drive Rollers used without the BL3 Motion Control electronic board, that are returned because of electronic faults, are not covered by the warranty against possible failures following electrical problems generated by the electrical system that supplies and controls them.

Fixing holes in the structure

The Drive Rollers do not have a through axis. The pins that support the bearings on the motor and idler side need to be fixed by roller support profiles that are perpendicular to the Drive Roller, solidly built and do not flex when the load passes.

In order to ensure that the pins are perpendicular to the support and that the nuts are tightened correctly on the pins, use closed support holes, not slots, open recesses or horizontal milling. To tighten the nuts and bolts, use a torque wrench and tighten to the torque setting given in the assembly instructions.

If there is no alternative but to use open recesses, add strong flat washers inside and outside the recess, that are fixed to the conveyor to recreate a rigid surface to provide the nuts and bolts with complete support. In order to determine C (internal abutting width of the shoulders) requested in the Drive Roller order, consider the thickness of any additional washers.

Assembly dimensions

During the Drive Roller design and assembly phase, check that the distance of the roller support shoulders is correct (dimension C of the Drive Roller), does not compress the pins inwards and does not release them to the outside, in order to avoid damaging the end housing and the gear motor cartridge.

To avoid this, the head on the standard M8 idler side and the pulley have an extractable pin for assembly with about 1-1.5 mm extraction in order to enable the Drive Roller to be fitted easily and to overcome any width tolerances of the supporting structure.

Warning: if Drive Rollers and driven rollers with Poly-V belts are used, make holes of max. 8.2 Ø (and max. 12.2 Ø on the cable side of the Drive Roller), to avoid excessive variation in the roller pitch and resulting pre-tensioning of the belts.

Warning: Never use Drive Rollers if there are mechanical stops with forced stop of the package whilst the Drive Roller is still running (to align the package against the stop). This would shorten the gearbox service life.

Never move or push the packages on the roller conveyor by hand or with forklift trucks to force the movement of the Drive Roller. This would shorten the gearbox service life.

Health and safety and waste disposal

Using the Drive Roller does not exempt the customer from taking all the necessary precautions to ensure the safety of operators or workers who assemble and maintain the roller conveyors. Precautions must also be appropriate to type of transmission used.

It is customer's duty to install all the electrical and mechanical protections specified by the regulations in force in the country in which the conveyor is installed. It is the customer's responsibility to dispose of the Drive Roller properly when it comes to the end of its service life.



THE BL3 DRIVE ROLLER

Powerful, versatile and fast

The great reliability and performance of the brushless motor together with the versatility and enhanced speed and torque range of the brushless motor have brought you the brand new RDR BL3 model, a new concept in Drive Rollers. The excellent value for money and the low energy consumption make the RDR BL3 Drive Roller the ideal choice for customers who demand top performance.

The configuration flexibility of the Drive Roller enables it to be used in a wide range of conditions and for a wide range of workloads. The BL3 Drive Roller can be easily used in conveyors with:

- low-medium-high or fixed speeds, or speeds that can be varied;
- compact dimensions without external drives and transmission;
- constant high torque settings throughout the speed range;
- complex operating patterns, also with frequent start/stop cycles;
- optimized operating consumption;
- low operating noise levels;
- maximum safety for line operators.

RDR BL3 DRIVE ROLLER: TECHNICAL CHARACTERISTICS AND ADVANTAGES

- Optimized system for transmitting torque directly from the motor to the shell and to the pulley, without sliding or loss (Rulmeca patent).
- Control and drive electronics of the brushless motor built into the Drive Roller and protected from polarity reversal.
- Integrated diagnostic functions with current fault output signal.
- Controlled dynamic braking.
- Speed from 0.05 to 1.25 m/sec, with the different reduction ratios.
- Speed variation through analogue signal (2.5-10 V) or dip switch on external board (remote control of speed also possible).
- Smart thermal overload protection with (automatic) current limiting.
- Overload overcurrent protection (automatic).
- Maximum safety because of low supply voltage (24 VDC).
- 5-pins connector for rapid connection of Drive Roller.
- Can be supplied without connector (by request).

- Also works without external BL3 Motion Control electronic board.
- Extra-short version and version for driving narrow conveyor belts are available.
- Enhanced functions and protections with the external BL3 Motion Control electronic board (recommended).
- Can be interfaced directly with PLC and distributed logic systems (BUS).
- Reduced noise and vibrations.
- Ideal for replacing traditional gear motors drives.

Shell

- Standard tube: Ø 50 x 1.5 mm, electrolytic zinc plated.
- Tube Ø 50 x 1.5 galvanized Sendzimir.
- Tube Ø 50 x 1.5 AISI 304 stainless steel (can be supplied only with complete stainless steel version).
- Tube Ø 51 x 2.0 (reinforced), electrolytic zinc plated.
- Tube Ø 53 x 3.0 mm (extra thick), zinc plated, by request can be machined convex / crowned for belt guide.

SHELL OPTIONS

- Soft PVC or polyurethane lagging.
- Vulcanized rubber or polyurethane lagging with choice of thickness and degree of hardness.
- Surface heat treatments by request.
- Extra-short version: (enables the shell to be shortened below the minimum standard length).

N.B. The extra-short version may be slightly noisier.

Contact Rulmeca for explanations and for special versions.

Motor cartridge

- Command and control driver built into the motor cartridge.
- High performance 24VDC brushless motor.
- Planetary gearbox with sintered gears, permanently lubricated, with different reduction ratios.
- Available reduction ratios: 12:1, 16:1, 24:1, 36:1, 49:1, 64:1, 96:1.
- Connection cable length 600 mm, Halogen free and with cut-proof sheath, Rulmeca branded, with built-in 5-pin - M8 connector.

CABLE OPTIONS

- Extension cable length 500 mm with female M8 - 5 pin connector with exposed non-stripped wires.
- Extension cable length 2000 mm with M8 - 5 pins male and female connectors.
- Extension cable length 5000 mm with M8 - 5 pins male and female connectors.

Motion transmission system

The BL3 Drive Roller features an optimized system for transmitting motion between the motor and the roller (patented by Rulmeca), which directly connects the output shaft of the gearbox to the transmission head by a sturdy transmission shaft and anti-vibration joints.

The patented system ensures that the pulley or pinion is positively driven without using the roller shell as a transmission means. The patent avoids any loss of traction due to slippage of the pulleys throughout the life of the Drive Roller. The correct coupling of the pinion to the tube is made by the special groove done in the tube and the relative tooth on the pinion. The transmission is the before totally positive obtained by mechanical couplings.

Due to the use of the patented Rulmeca transmission system, (which connects the drive shaft to the pulley mechanically), in combination with the positive coupling pulley (which connects the pulley to the tube mechanically), the Drive Roller is totally free of possible transmission system slips generated by coupling obtained by loose interference of the parts.

Drive Head on cable side (IP54)

- Drive head with IP54 protection marking made of semi conductive antistatic technopolymer, with 6203-2RS bearing, with 11mm hexagonal male threaded pin, M12, pitch 1.75.

Drive Head on side opposite to cable (IP54)

- Standard idler head with 6002-2RS bearing, floating pin M8-19.
- Poly-V pulley, PJ ISO 9981, DIN 7867 with 6002-2RS bearing, floating pin.
- Poly-V pulley, PJ ISO 9981 DIN 7867 with 6002-2RS bearing, 625-2RS bearing 11 mm hex. springed zinc plated shaft.
- Double O-ring pulley with 6002-2RS bearing, floating pin M8-19.
- Double O-ring pulley with 6002-2RS

BL3 CONFIGURATIONS

bearing, 625-2RS bearing 11 mm hex springed zinc-plated shaft.

- Double chain sprocket 1/2" Z14, driven/frictioned 6002-2RS bearing, floating pin M8-19.

Drive Roller fixing screws

The floating pin on the drive head side, M8 female threaded, 19mm A/F, has an anti-extraction system (except for the standard idler head version).

- ALL THE PROPOSED VERSIONS HAVE IP54 PROTECTION MARKING (in accordance with standard CEI EN 60529/1997).
- THE GREASE USED IN THE DRIVE ROLLER IN ALL THE ABOVE VERSIONS ARE NOT CERTIFIED FOR USE WITH FOODSTUFFS.
- THE DRIVE ROLLERS ARE NOT CERTIFIED FOR USE IN (ATEX) EXPLOSIVE ENVIRONMENTS.

Functions built into the RDR BL3 Drive Roller

- Speeds adjustable within the range set out in the motor tables below, depending on the reduction ratio.
- if the Drive Roller is used without any BL3 Motion Control electronic board, a 2.5-10 VDC voltage signal is used to adjust speed.
- if the Drive Roller is used with a BL3 Motion Control electronic board, speed is varied by the dip switches on the board or remotely in digital mode.
- Change of direction

- Static braking system with stationary package (the standing torque value depends on the reduction ratio).
- Can be connected directly to the PLC.
- Overload protection: when maximum current is reached, the Drive Roller stops and makes a total of 3 restart attempts before sending the fault signal that shuts down the motor.
- If you use the Drive Roller without a BL3 Motion Control electronic board, to reset the fault signal and restore operation, eliminate the cause of the fault and then reset the start signal.
- If you use the Drive Roller with a BL3 Motion Control electronic board, to reset the fault signal and restore operation, disconnect the power supply to the DC bus, eliminate the cause of the fault and then restore the power supply to the system.
- Thermal overload protection: when the motor's temperature exceeds the safety threshold, the electronic board activates the used power limitation function without sending fault signals. The power limitation function resets automatically when the motor temperature returns within the acceptable range.
- If the motor continues to overheat despite the limitation, the motor emits a fault signal and then after 60 seconds it cuts out. The Drive Roller restarts automatically once the operating temperature returns within the acceptable range.
- Protection against polarity reversal: the Drive Roller is protected against accidental connection errors of the supply polarity.



For instructions on the correct installation and use of the Drive Roller, download the technical manual of the BL3 from <https://www.rulmeca.com/en/> or contact Rulmeca to receive a PDF copy.

TECHNICAL FEATURES

RDR BL3 DRIVE ROLLER

Dimensional data

Tube standard diameter [mm]	50 - 51 - 53
Tube standard thickness [mm]	1,5 - 2,0 - 3,0
Maximum length "C" [mm]	1500

Environmental conditions

Ambient operating temperature	-10 ÷ +35 °C
Storage ambient temperature	-30 ÷ +75 °C
Maximum humidity	90% without condensate

Electrical data

Nominal voltage	24 Vdc
Power supply range	18 ÷ 26Vdc
No-load current	0.8 A
Nominal current	3.0 A
Max. inrush current	3.8 A
Max. operating current	4.8 A

General technical data

Noise levels (Correctly assembled)	55 dB(A)
Theoretical average life in nominal conditions	15'000 h

DRIVE ROLLER BL3 PERFORMANCE

Reduction ratio	Max nominal tangential speed						Nominal torque	Inrush torque	Holding torque (powered)	Nominal tangential force
	m/s		m/min		rpm					
	Min	Max	Min	Max	Min	Max				
12:1	0,03	1,25	1,8	75	11,6	484	0,9	1,0	0,3	36
16:1	0,02	1,00	1,2	60	7,7	387	1,1	1,3	0,5	46
24:1	0,02	0,68	1,2	40	7,7	258	1,7	1,9	0,7	70
36:1	0,01	0,45	0,6	27	3,8	172	2,6	2,9	1,1	104
49:1	0,01	0,33	0,6	20	3,8	126	3,2	3,6	1,6	128
64:1	0,01	0,25	0,6	15	3,8	97	4,2	4,7	2,0	166
96:1	0,005	0,17	0,3	10	1,9	64,6	6,3	7,0	3,75	252

The performance data refer to the Drive Roller with tube Ø 50 mm.
When adjusting speed, do not reduce below 10% of maximum speed.
For example with rr 16:1 (max 1 m/s) don't operate under 0,1 m/s.

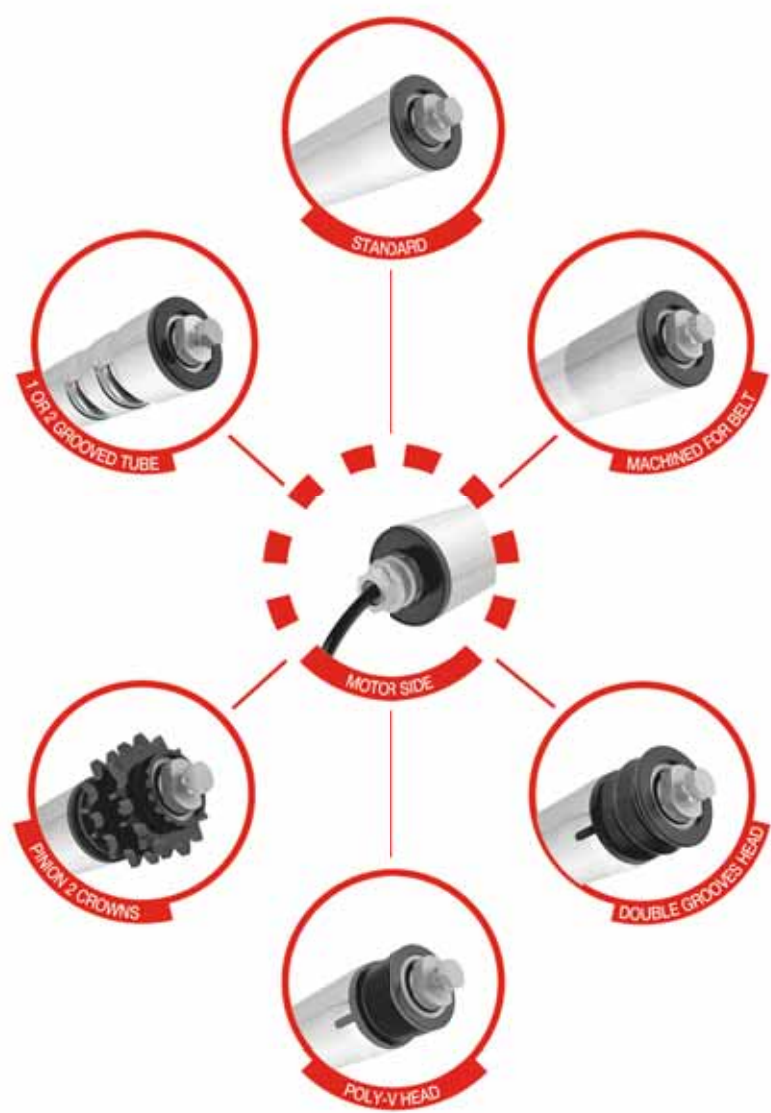
Shell	Extra-short version*		Standard version			
	Simple execution	Poly-V or double grooves pulley	Simple execution	Grooves on the tube	Poly-V or double grooves pulley	Double pinion 1/2" Z=14
Rid.	mm	mm	mm	mm	mm	mm
12:1	240	260	292	314	310	350
16:1	240	260	292	314	310	350
24:1	240	260	292	314	310	350
36:1	240	260	292	314	310	350
49:1	252	272	304	326	322	362
64:1	252	272	304	326	322	362
96:1	252	272	304	326	322	362

The weight of a Drive Roller measuring C=500 is about 2,8 kg, with cm increase of 0,026 kg/cm

* The length C of the Drive Roller in the extra short version is a **fixed value** and is without grooves.

Warning: the extra short version of the Drive Rollers could be a little noisier, as noise dampeners removed to achieve smaller roller lengths.

CABLESIDE (FOR ALL CONFIGURATIONS)



DRIVE POWER CONFIGURATION

	Standard idler head	Grooved tube	Poly-V pulley head	Double grooves pulley head	Pinion for chain head	Tube machined for belt
Floating Pin M8-19	X	X	X	X	X	X
11 mm hex springed shaft			X	X		

LOAD CAPACITY PC OF THE RDR BL3 DRIVE ROLLER

If the conveyed material has a NOT extremely rigid surfaces, the load on the Drive roller P is:

$$P = \frac{3 \cdot Pu}{2 \cdot \pi}$$

If the conveyed material has an extremely rigid surfaces, the load on the Drive roller P is:

$$P = \frac{2 \cdot Pu}{\pi}$$

With:

n= number of rollers under the conveyed material (n≥3)

Pu= conveyed material weight

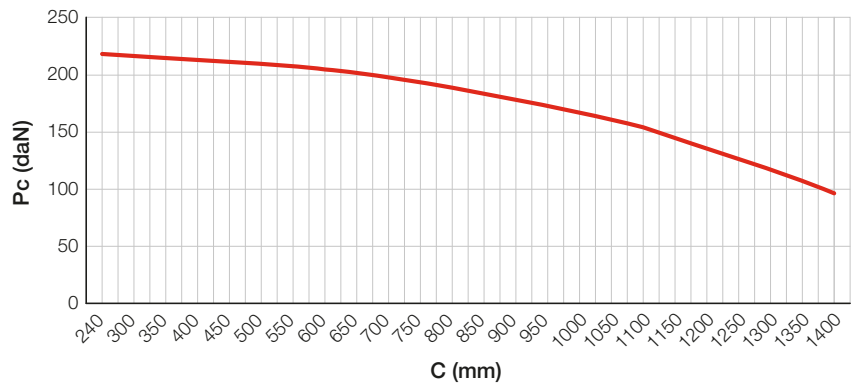
- **Static load capacity:** the indicated load capacity values are in relation to the length, considering the tube deflection and stress.

Furthermore is considered the transmission suitability to move driven rollers connected to the drive roller, without slipping.

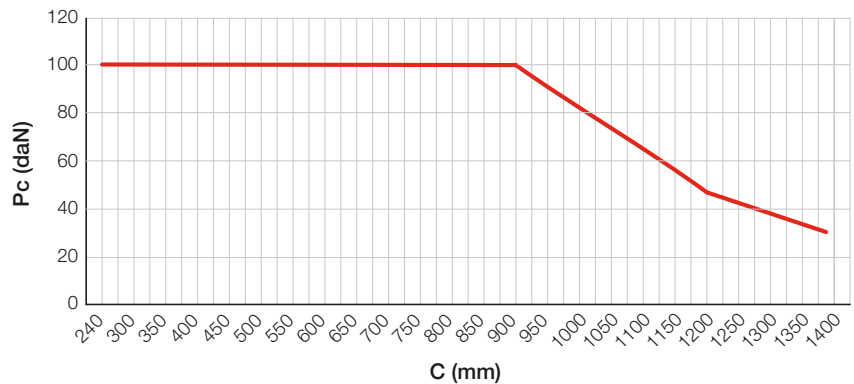
- **Dynamic load capacity:** maximum bearing load is indicated in relation to the rotating speed, calculated for a theoretical bearing life of 15.000 h.

The drive roller load capacity "Pc" shall result in being the smallest value chosen between static load value and dynamic load value, considering always: $P_c \geq P$ where P is the real load on the Drive roller.

STATIC LOAD IN STANDARD DRIVE ROLLER CONFIGURATION



STATIC LOAD IN S3 DRIVEROLLER CONFIGURATION - CHAIN LOOPS TRANSMISSION



Static load for PV – PV11D Drive Roller Configurations - POLY-V belts transmission.

The static load capacity for the configurations PV and PV11D is **Pc=35daN** for any C length orderable by catalogue.

Static load – for F1 - E - F drive roller configurations

The static load capacity for the configurations F1, E and F is **Pc=30daN** for any C length orderable by catalogue.

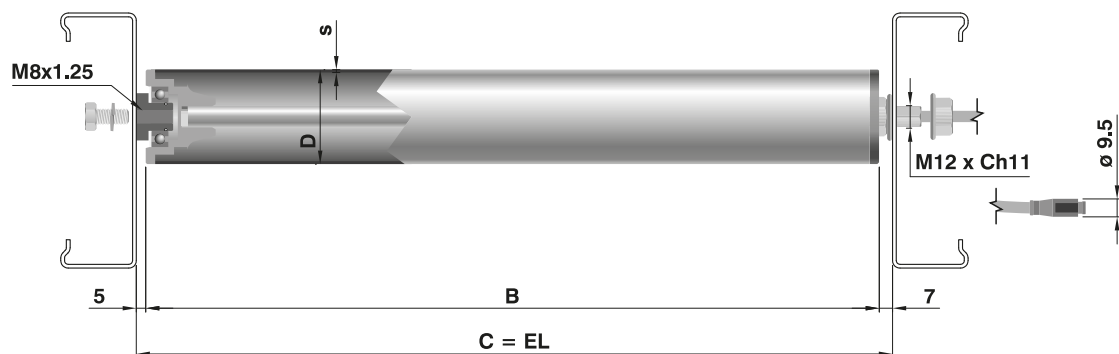
Attention! All static load capacity values are referred to uniformly distributed condition.

DRIVE ROLLER DYNAMIC LOAD

Reduction ratio	Speed [rpm]	Pc [daN]
12:01	484	154
16:01	387	166
24:01:00	258	190
36:01:00	172	217
49:01:00	126	241
64:01:00	97	263
96:01:00	65	301

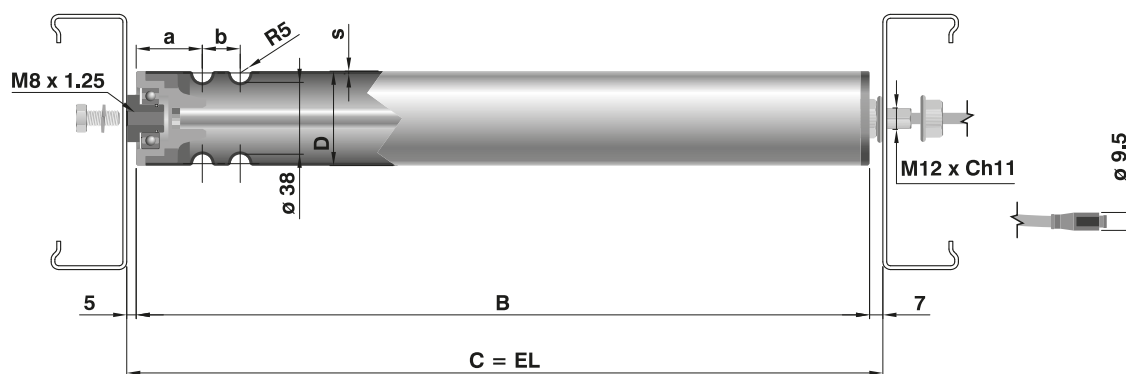
For load capacity values of special versions or C length not included in the catalogue, please contact Rulmeca technical department.

SIMPLE EXECUTION

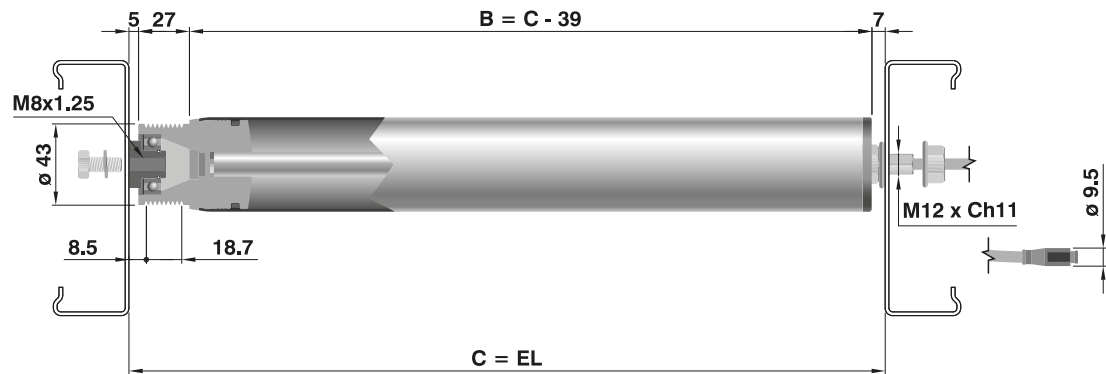


D [mm]	s [mm]
50	1,5
51	2,0
53	3,0

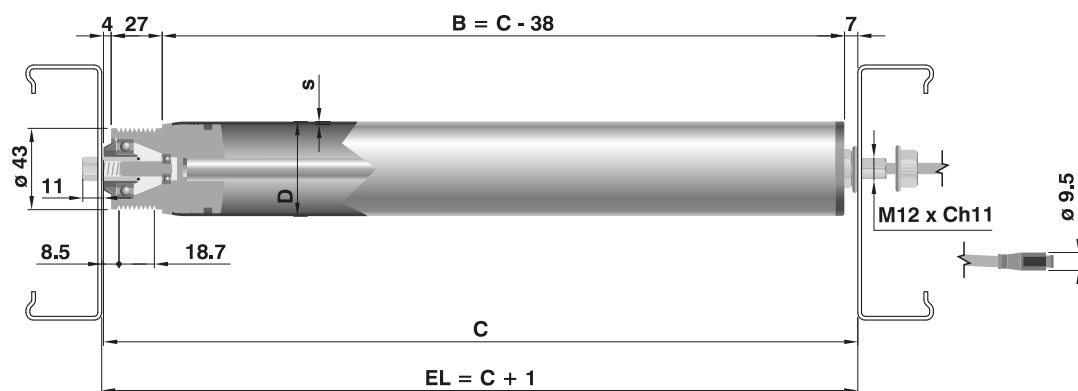
GROOVES ON THE TUBE VERSION



D [mm]	s [mm]
50	1,5
51	2,0

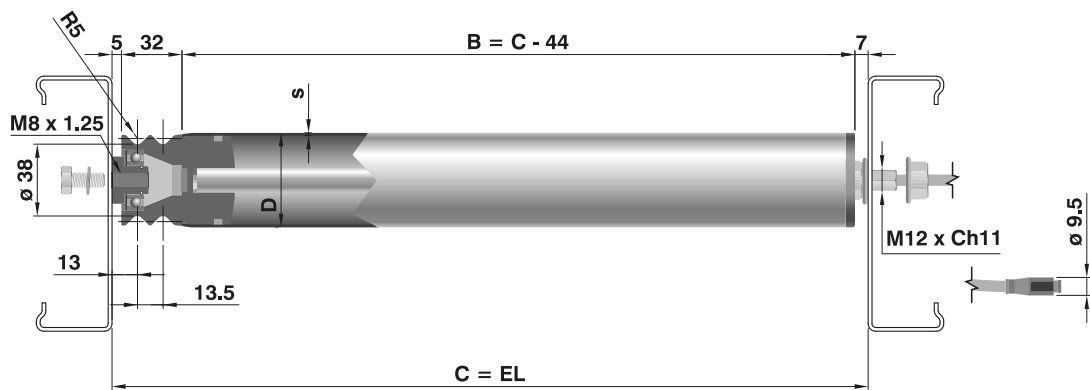


D [mm]	s [mm]
50	1,5
51	2,0



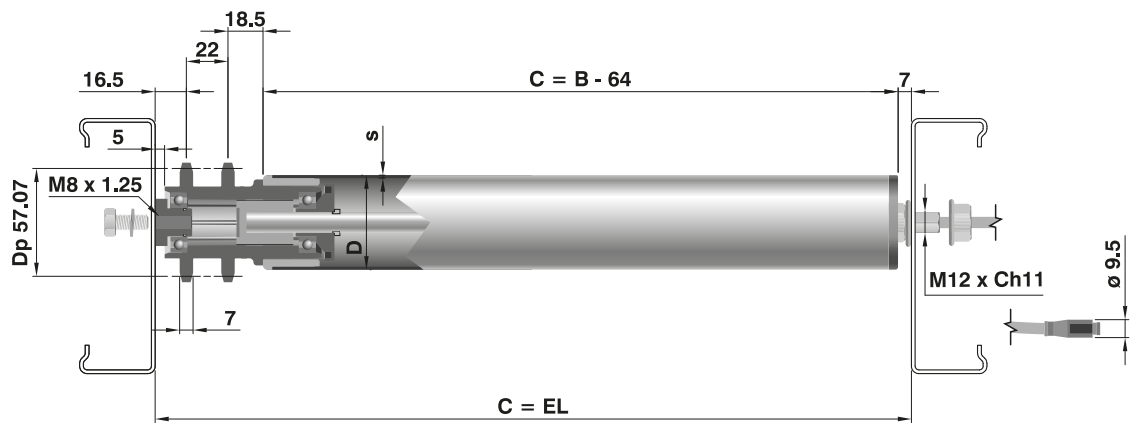
D [mm]	s [mm]
50	1,5
51	2,0

DOUBLE GROOVES PULLEY AND FLOATING PIN VERSION



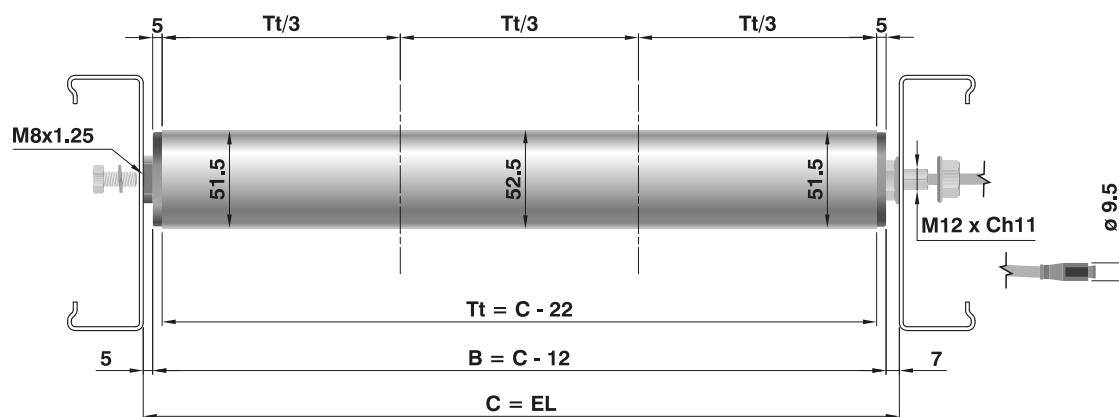
D [mm]	s [mm]
50	1,5
51	2,0

DOUBLE SPROCKET PINION 1/2" Z=14 VERSION

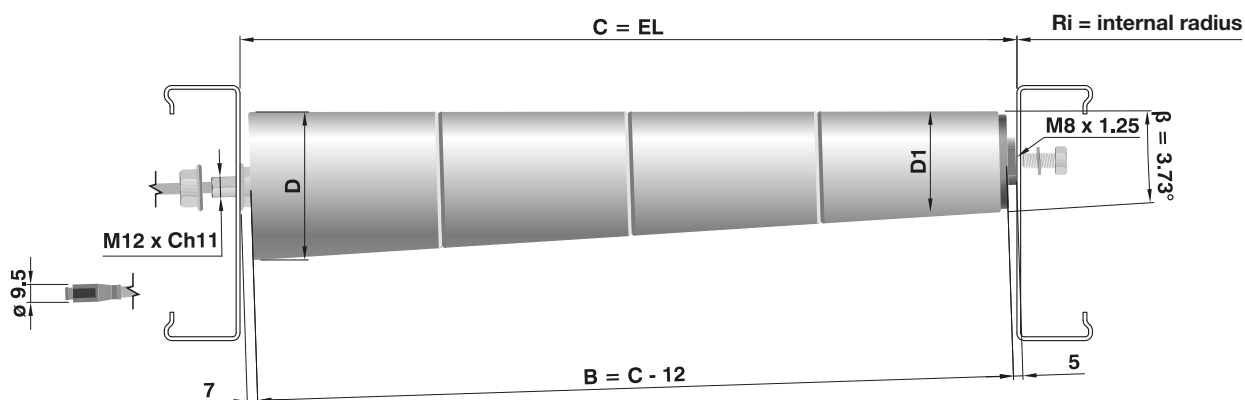


D [mm]	s [mm]
50	1,5
51	2,0
53	3,0

VERSION FOR SMALL CONVEYOR BELTS (BICONICAL TOURNING)



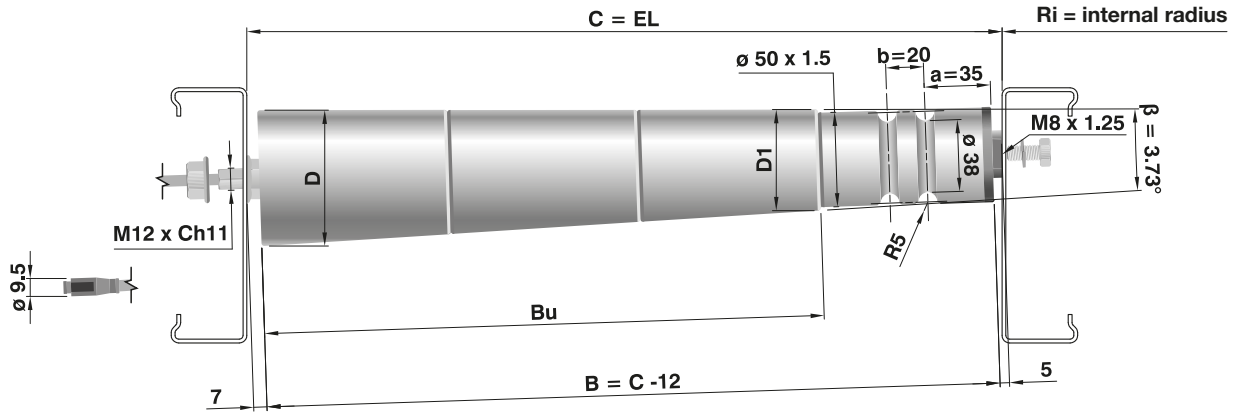
TAMPERED SIMPLE VERSION FOR CURVES



C [mm]	D [Ø mm]	D1 [Ø mm]	Ri [mm]
312	72.0	53.4	795
362	78.5	56.4	845
412	78.5	53.4	795
462	85.0	56.4	845
512	85.0	53.4	795
562	91.3	56.4	845
612	91.3	53.4	795

C [mm]	D [Ø mm]	D1 [Ø mm]	Ri [mm]
662	97.6	56.4	845
712	97.6	53.4	795
762	104.0	56.4	845
812	104.0	53.4	795
862	110.3	56.4	845
912	110.3	53.4	795

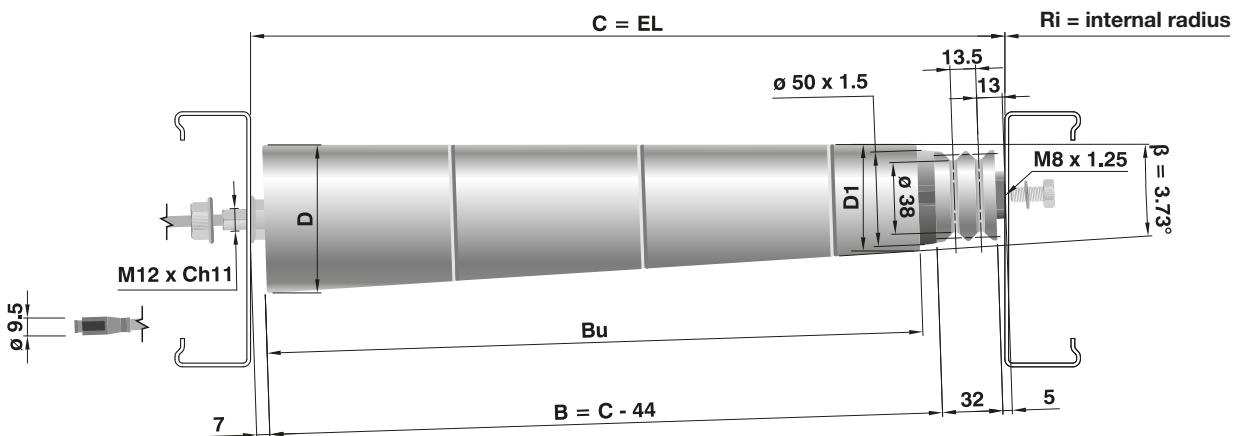
TAMPERD GROOVES ON THE TUBE VERSION FOR CURVES



C [mm]	Bu [mm]	D [Ø mm]	D1 [Ø mm]	Ri [mm]
350	245	72.0	55.8	770
400	295	72.0	52.5	720
450	345	78.5	55.8	770
500	395	78.5	52.5	720
550	445	85.0	55.8	770
600	495	85.0	52.5	720
650	545	91.3	55.8	770

C [mm]	Bu [mm]	D [Ø mm]	D1 [Ø mm]	Ri [mm]
700	595	91.3	52.5	720
750	645	97.6	55.8	770
800	695	97.6	52.5	720
850	745	104.0	55.8	770
900	795	104.0	52.5	720
950	845	110.3	55.8	770
1000	895	110.3	52.5	720

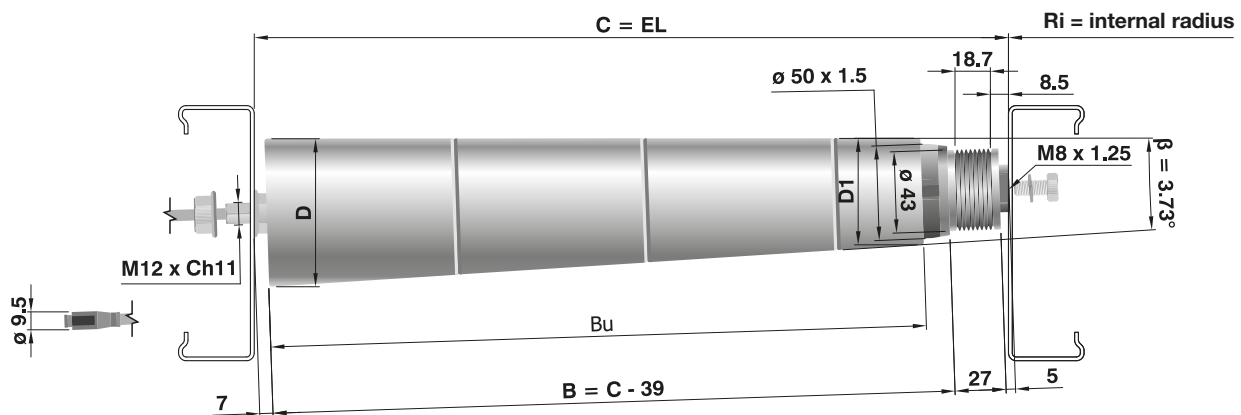
TAMPERED DOUBLE GROOVES PULLEY VERSION FOR CURVES



C [mm]	Bu [mm]	D [Ø mm]	D1 [Ø mm]	Ri [mm]
350	295	72.0	52.5	770
400	345	78.5	55.8	820
450	395	78.5	52.5	770
500	445	85.0	55.8	820
550	495	85.0	52.5	770
600	545	91.3	55.8	820
650	595	91.3	52.5	770

C [mm]	Bu [mm]	D [Ø mm]	D1 [Ø mm]	Ri [mm]
700	645	97.6	55.8	720
750	695	97.6	52.5	770
800	745	104.0	55.8	820
850	795	104.0	52.5	770
900	845	110.3	55.8	820
950	895	110.3	52.5	770

TAMPERED POLY-V PULLEY VERSION FOR CURVES



C [mm]	Bu [mm]	D [Ø mm]	D1 [Ø mm]	Ri [mm]
350	295	72.0	52.5	770
400	345	78.5	55.8	820
450	395	78.5	52.5	770
500	445	85.0	55.8	820
550	495	85.0	52.5	770
600	545	91.3	55.8	820
650	595	91.3	52.5	770

C [mm]	Bu [mm]	D [Ø mm]	D1 [Ø mm]	Ri [mm]
700	645	97.6	55.8	720
750	695	97.6	52.5	770
800	745	104.0	55.8	820
850	795	104.0	52.5	770
900	845	110.3	55.8	820
950	895	110.3	52.5	770

ELECTRICAL CONTROL OF THE RDR BL3 DRIVE ROLLER

For use without BL3 Motion Control board

Electrical control of the RDR BL3 Drive Roller

The BL3 Drive Roller does not necessarily need the external Motion Control electronic board (although it is strongly recommended). It can be connected directly to a PLC or to automation systems, or BUS, or be controlled by simple switches and potentiometers (the latter only for varying speed).

The Drive Roller is supplied with a standard multicore cable with 5 conductors, 600 mm in length, with 5-pin connector.

On request it is possible to have the extension cable with M8 5 pin female socket and stripped and tinned wires, length 500 mm. The Drive Roller, with built-in driver, offers the basic protections required against:

- Overcurrents
- Thermal overload
- 24 VDC inverted polarity

The available functions with a direct connection (without external Motion Control board), are:

- Motor power supply
- Start/stop (input)
- Speed variation (input)
- Change of direction (input)
- Fault signal (output)

Warning: the BL3 Drive Roller used without the Motion Control electronic board is not protected from voltage fluctuations or peaks (spikes) generated by inductive loads and propagated on the VDC power supply line and on the Input/output control signals.

The customer is responsible for providing a regulated constant VDC supply and appropriately filtering the sources of disturbs, (mainly generated by the disconnection of inductive loads) so that they do not damage the integrated electronics.

It is the customer's responsibility to fit the required fuses and short circuit protections on the power supply line.

Any faults due to these problems are not covered by the warranty if the external RMC BL3 board is not used.

Please refer to the Technical Manual at <https://www.rulmeca.com/en/>



CONNECTION OF THE BL3 DRIVE ROLLER

For use without BL3 Motion Control board

Connection of BL3 Drive Roller without connector

The Drive Roller without snap-in connector must be expressly requested with extension cable with M8 5-pin female socket and stripped and tinned wires, length 500 mm.

Power supply: connect the RED power wire to positive pole and BLUE to negative pole of the 24 VDC power supply unit (better if of voltage controlled and filtered switching type) that is able to supply appropriate current to the maximum loads conveyed simultaneously.

Using the BL3 Motion Control electronic board

The connection cable of the BL3 Drive Roller consists of 5 wires that, in the standard version, is supplied already ending with the M8-5pin male connector.

The connector has been designed to be easily inserted through the supporting hole in the structure in which the Drive Roller's fixing pin Ø 12 mm has to be fixed. Insert the connector into the relative socket of the BL3 Motion Control electronic board.

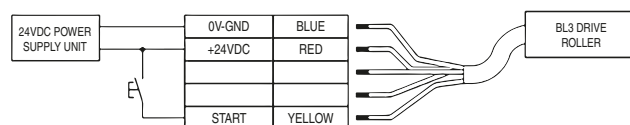
Please refer to the Technical Manual at <https://www.rulmeca.com/en/>



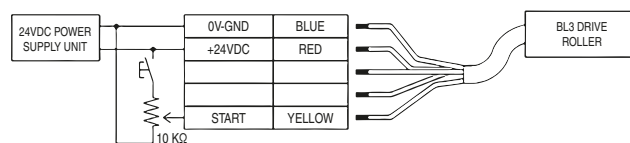
Wire colour	Function
Red	Supply +24 VDC
Blue	Supply 0V-GND
Yellow	Start- Speed
Green	Rotation direction
Black	Fault signal (output)

CONNECTION OF THE BL3 DRIVE ROLLER (without BL3 Motion Control electronic board)

Start: to start the Drive Roller at maximum speed, once the fixed 24 VDC supply has been connected, supply 10 - 24 VDC to the YELLOW wire. In this way, the Drive Roller will reach its maximum speed (in the anticlockwise default direction, seen from the cable output side).



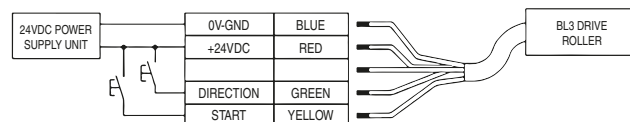
Speed variation (optional): to set an intermediate speed between minimum and maximum, send a signal between 2.5 and 10 VDC to the yellow wire (START). For this purpose, a 10 K Ω potentiometer (or a resistor of suitable value) can be connected between the RED wire and the YELLOW wire according to the wiring diagram by adjusting the speed you can also create acceleration and/or deceleration ramps, setting a variation in the reference voltage/speed over the desired time, using a PLC with analogue output voltage that can be varied by the program.



Rotation direction: the default rotation direction of the Drive Roller is anticlockwise (viewed from the cable output side). To reverse the rotation direction, connect a 10 to +24 VDC signal to the GREEN wire or directly to the positive supply pole.

Warning: before changing direction, make sure that the Drive Roller and the load are completely stationary to avoid damaging the reduction gear.

Warning: to start up the Drive Roller directly in the opposite direction of travel (clockwise), first supply the direction signal and only then start up the motor with the start signal.

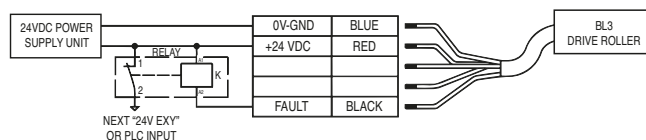


Fault signal: the RDR Drive Roller is provided with a protection system managed by the internal electronics that can prevent damage to the Drive Roller by promptly sending to the user or to a PLC a signal warns to different types of problem (alarm, fault).

The output fault signal on BLACK cable is an Open-Collector NPN. The output signal supplied follow this logic:

- If the motor operates without any problem being detected the output Fault signal will be high.
- If the motor is stuck-up or a problem has been detected the output Fault signal will be low

To connect the fault output to a PLC input is necessary to use and additional relay (not provided) with a current absorption lower than 5 mA connected according to the diagram below.



BUS systems. The RDR BL3 Drive Roller can be connected to BUS systems (like ASi BUS systems). Refer to the signals supplied by the BUS system chosen to control the Drive Roller.

The Technical Manual can be downloaded from <https://www.rulmeca.com/en/>

EXTERNAL BOARD

Rulmeca RMC-BL3 Motion Control



Features

Although the RDR BL3 Drive Roller can be operated directly without any need for an external electronic board (in the version with a cable without a connector), Rulmeca can supply and advise using an external electronic board. This will enhance the basic functions of the Drive Roller, making its control simple and protected, high performance, compact and inexpensive, avoiding terminal boxes and junction boxes that have to be installed by the customer.

The BL3 Motion Control boards facilitate the connection, running and electrical protection of the BL3 Drive Roller. The Motion Control board has a M8-5 pin socket to make installation of the Drive Roller easy and clean, ensuring fast and safe connection.

The board is also provided with terminal blocks that can be extracted with a tool-free fixing system so as to make cabling of the rest of the machine simpler.

Characteristics of the BL3 Motion Control board:

- Compact dimensions 114 x 50 x h23 mm.
- IP20 protection marking.
- System for fixing the board to the conveyor with 2 screws.
- Protected M8-5 pin socket for fast and safe connection of the BL3 Drive Roller.
- Extractable terminal blocks for power supply and command signals
- Microprocessor logic.
- Dip switches for rapid selection of the functions, protected by interlock
- Signal LED for immediate and intuitive detection of functions.

RMC board functions

- Drive Roller power supply, protected by fuse (not replaceable).
- Opto-isolation of Input/ Output signals.
- Change of rotation direction by dip switch or by remote control signal.
- Digital selection of the speed by dip switch or by 3 contacts on terminal block J2.
- Smart control of fault signal activation.
- Start-stop, speed, rotation direction and fault signal output can be managed remotely.

The contacts of the input/output signals are all opto-isolated so as to be able to connect the Motion Control board directly to possible PLCs or simple contacts, in complete safety.

The built-in fuse protects the Drive Roller effectively from overcurrents.

The customer is responsible for protecting the power supply line suitably from short circuits or disturbances.

Please refer to the Technical Manual at <https://www.rulmeca.com/en/>



EXTERNAL BOARD

Rulmeca RMC-BL3 Motion Control

Motor protections

The Drive Roller is protected by the electronic board built into the motor that prevents damage to the motor from incorrect cabling and polarity reversal of the power supply.

The Motion Control electronic board enables the protections to be extended. It also protects the Drive Roller via a suitable fuse and opto-isolation of the I/O signals that ensures that the system is not harmed by spikes.

Warning: do not connect 230 or 400 VAC. Such a VAC supply would irreparably damage the board and the Drive Roller connected to it.

Status lamps

On the front of the board there are two lamps that give immediate visual information on the status of the Drive Roller.

LED READY (green)

- OFF
Main power supply (+24VDC) absent or incorrect
- STEADY BEAM
Main power supply (+24VDC) correct
- FLASHING
Drive Roller start command received and Drive Roller rotating

LED FAULT (red)

- OFF
No problem detected
- STEADY BEAM
Fuse inside tripped. Replace RMC.
- FLASHING
Drive Roller fault, incorrect motor cabling, Drive Roller alarm signal due to tripped overcurrent or thermal overload protection.

BOARD DIMENSIONS

mm 114 x 50 x h 23 (Max)

Electrical data

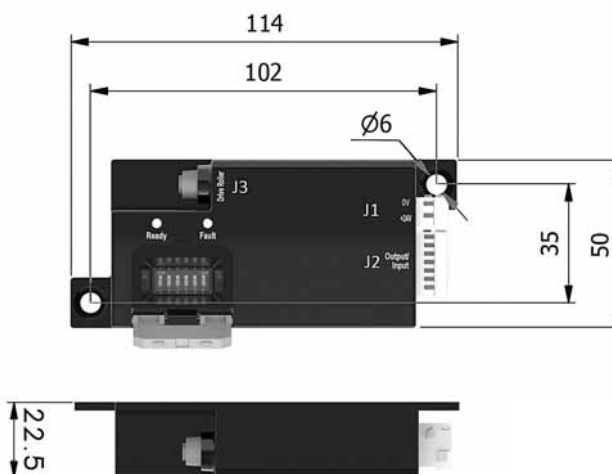
Nominal voltage	24 VDC
Voltage Range	20 - 26 VDC
No-load current	0.03 A
Safety fuse	Present
Power supply ripple	Max 5 %
Protection level	IP 20

Environmental conditions

Ambient operating temperature	-10 - +45 °C
Ambient storage temperature	-20 - +75 °C
Maximum non- condensing humidity	90%

Electrical Connections

Power cable section	1 mm ²
I/O power cable section	from 0.08 to 0.5 mm ²



EXTERNAL BOARD

Rulmeca RMC-BL3 Motion Control

Setting functions by DIP SWITCH

From the front opening, the dip switches can be accessed to set:

- Speed (dip switches 2-3-4-5);
- Rotation direction (dip switch 1); dip switch 6 is not used.

If dip switches are used to set the Drive Roller's operating parameters, the electronic board must be connected in the following manner:

Contact A, when connected to the +24 VDC power supply, starts up the Drive Roller (in the anticlockwise default direction).

The DIR contact (optional), when connected to the +24 VDC power supply, changes the rotation direction of the Drive Roller to clockwise.

Warning: disconnect the power supply when wiring the board to the power supply and when connecting the Drive Roller to the Motion Control board.

Each setting (speed or rotation direction) should be carried out with the Drive Roller stationary.

Please refer to the Technical Manual at <https://www.rulmeca.com/en/>



EXTERNAL BOARD

Rulmeca RMC-BL3 Motion Control

DIP SWITCH settings

Speeds selectable from board

Use dip switches 2 - 3 - 4 - 5 to change the rotation speed of the BL3 Drive Roller.

See the table below for the speed values of the dip switch settings and the reduction ratio indicated in the Drive Roller specifications.

Direction

Through the dip-switch 1 it is possible to change the drive roller rotation direction from clockwise (off position) to counter clockwise (on position).

Speed setting of the BL3 Drive Rollers with the dip switches on the Rulmeca Motion Control board				Speed compared to gear reduction ratio						
				m/s						
2	3	4	5	12:1	16:1	24:1	36:1	49:1	64:1	96:1
on	on	on	on	1,25	1,00	0,67	0,45	0,33	0,25	0,16
on	on	on	off	1,24	0,95	0,65	0,43	0,32	0,24	0,15
on	on	off	on	1,22	0,90	0,60	0,41	0,30	0,23	0,13
on	on	off	off	1,10	0,85	0,55	0,38	0,28	0,21	0,12
on	off	on	on	1,00	0,77	0,50	0,34	0,25	0,19	0,11
on	off	on	off	0,90	0,70	0,45	0,31	0,23	0,18	0,10
on	off	off	on	0,80	0,60	0,40	0,28	0,20	0,15	0,09
on	off	off	off	0,70	0,55	0,37	0,24	0,18	0,13	0,08
off	on	on	on	0,60	0,47	0,32	0,21	0,15	0,12	0,07
off	on	on	off	0,50	0,40	0,26	0,17	0,13	0,10	0,06
off	on	off	on	0,40	0,30	0,21	0,14	0,10	0,08	0,05
off	on	off	off	0,30	0,25	0,16	0,11	0,08	0,06	0,04
off	off	on	on	0,20	0,16	0,11	0,07	0,05	0,04	0,03
off	off	on	off	0,10	0,08	0,06	0,04	0,03	0,02	0,01
off	off	off	on	0,03	0,02	0,02	0,01	0,01	0,01	0,006
off	off	off	off	Enable for the remote speed adjustment (external contacts A – B – C)						

Warning:

- We recommend only using the dip switches when the Drive Roller is stationary.
- Close the protection hatch after making the settings.
- A label on the inside of the protection hatch shows the dip switch number and the relative function.

EXTERNAL BOARD

Rulmeca RMC-BL3 Motion Control

Setting functions remotely

The Motion Control electronic board is arranged to be remote controlled by sending the motor of the BL3 Drive Roller all the required signals.

The Drive Roller can be set remotely only if all the dip switches have been switched OFF.

The board has 3 sockets:

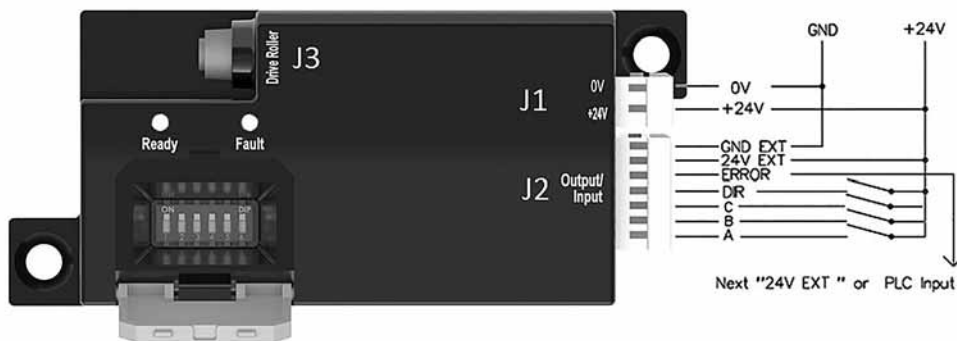
- J1: 2-core extractable terminal block to connect to the main power supply.
- J2: Extractable 7-core terminal block to connect the remote Input/Output.
- J3: 5-core socket for connecting the BL3 Drive Roller.

Warning: disconnect the power supply when wiring the board to the power supply and when connecting the Drive Roller to the Motion Control board.

Please refer to the Technical Manual at <https://www.rulmeca.com/en/>



For the remote control of the Drive Roller, connect the board as shown on the relative wiring diagram:



Selecting speeds remotely

Switch all dip switches to OFF if using contacts A-B-C of the terminal block J2 to vary drive roller rotation speed remotely.

Send 24 VDC signals to the combined contacts A-B-C to set the speed of the Drive Roller in accordance with the following table:

Selecting speed remotely (using a PLC) enables acceleration or deceleration ramps to be created by combining the three signals together.

Setting speed dip switches on control board			Speed compared to gear reduction ratio						
			m/s						
A	B	C	12:1	16:1	24:1	36:1	49:1	64:1	96:1
on	on	on	1,25	1,00	0,67	0,45	0,33	0,25	0,16
on	on	off	1,22	0,92	0,63	0,41	0,30	0,23	0,15
on	off	on	1,00	0,77	0,52	0,34	0,25	0,19	0,13
on	off	off	0,80	0,62	0,41	0,28	0,20	0,15	0,10
off	on	on	0,63	0,47	0,32	0,21	0,15	0,12	0,08
off	on	off	0,41	0,31	0,21	0,14	0,10	0,08	0,05
off	off	on	0,20	0,16	0,11	0,07	0,05	0,04	0,03
off	off	off	Drive Roller stopped						



DRIVEN ROLLERS

117 Series



Idler rollers for conveying packages with light and medium loads, in indoor environments with grooves for transmission with round belts.

They are very versatile rollers with great scope that run particularly smoothly and silently. The bearings are housed in black polyamide seats; with radial precision bearings, 6002-2RZ as standard, or permanently lubricated stainless steel bearings. They are protected by a RAL 1023 yellow polypropylene cover.

The drilled and threaded shaft for fixing with screws makes the assembly more rigid and sturdier.

The tube can be zinc plated or galvanized steel, or stainless steel, D 50, 1.5 mm thick,

with 2 grooves formed into tube for transmission with round belts.

This particular form of polymer housing, the precision of the assembly and the type of bearing used make these rollers particularly strong, with excellent performance in driven and belt applications.

Use is normally permitted for ambient temperatures between -5° C to +80° C. Lower minimum temperatures are permitted if conditions of use are checked.

We advise you to use the standard specifications and lengths. Rollers with grooves for transmission with round belts are supplied as standard in the antistatic version. The belts must have a section of ø 4-5 mm.

Order code							f	a	b	R	Weight		Weight of rotating parts		Options	
Type	Shaft		Tube		Length C						C=200 daN	Per cm daN	C=200 daN	Per cm daN	Vers. per cm	Vers. Tube
117/12	d(ø)	vers.	d(ø)	vers.	min.	max	5	35	20	5	0.630	0.027	0.432	0.018	daN	N-J-I-P

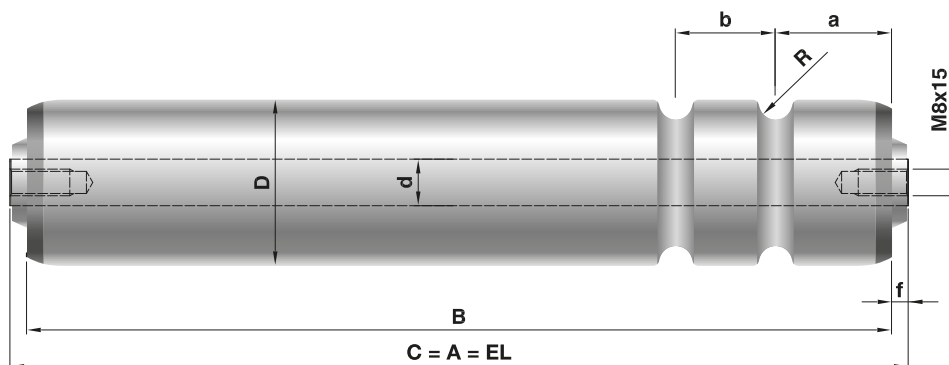
N.B. Please remember that rollers lagged with PVC or rubber are not antistatic. The user must fit additional conductive devices that we cannot supply to prevent static electricity being generated on the packages and on the surface of the rollers.

Legend of version acronyms:
R Shaft, bored and threaded
D Shaft with spring
J Shaft, electro-zinc plated
I Shaft, AISI 304 stainless steel

Z Tube, galvanized Sendzimir
J Tube, electro-zinc plated
N Tube, normal steel
I Tube, AISI 304 stainless steel
P Lagged with soft PVC sheath

LOAD CAPACITY

Please refer to the Unit Handling master catalogue for the max. weight per roller.



DRIVEN ROLLERS

135/138 Series



Friction and fixed driven rollers with pulley for flexible Poly-V belts.

These rollers have general characteristics corresponding to those of the 135 (driven) series and of the 138 (friction-operated) series but with interchangeable pulleys instead of toothed pinions. The pulleys are black polyamide with 9 V-profile grooves, pitch J (ISO 9981 DIN 7867), stabilized and particularly hard-wearing and suitable for heavy duty. The pulley accepts belts with up to 4 ribs (with a free groove interposed between the two belts)

The rollers feature 6002-2RZ precision radial bearings or stainless-steel bearings on request. They are available in the galvanized steel tube version or by request in

the AISI 304 stainless steel version or other versions that are equivalent to the Drive Rollers. Use is normally permitted for ambient temperatures between -5° C to +80° C. Never connect more than 20 rollers to any one motor. The maximum number of rollers is influenced by the torque that can be dispensed by the Drive Roller.

The antistatic version of these rollers must always be requested.

Remember that rollers lagged with PVC or polyurethane will not be antistatic. In this case, the user must fit additional conductive devices that we cannot supply to prevent static electricity being generated on the packages and on the surface of the rollers.

Order code							s	Weight		Weight of rotating parts		Options	
Type	Shaft		Tube		Length C			C=200 daN	Per cm daN	C=200 daN	Per cm daN	Vers. per cm	Version Tube
135/V1	14	R	50	Z	130	1600	1.5	0.721	0.030	0.452	0.018	J-I	J-N-I-P
138/V1	14	R	50	Z	130	1200	1.5	0.721	0.030	0.452	0.018	J-I	J-N-I-P

N.B. for clutch- operated rollers, do not exceed a speed of 0.5 m/s.

On request: antistatic version (COMPULSORY), version with AISI 440 stainless steel bearings. Versions with PVC sheath or other types of lagging reduce the thrust capacity of the clutch-operated rollers.

Legend of version acronyms:

- R** Shaft, bored and threaded
- J** Shaft, electro-zinc plated
- I** Shaft, AISI 304 stainless steel

Z Tube, Sendzimir galvanized

J Tube, electro-zinc plated

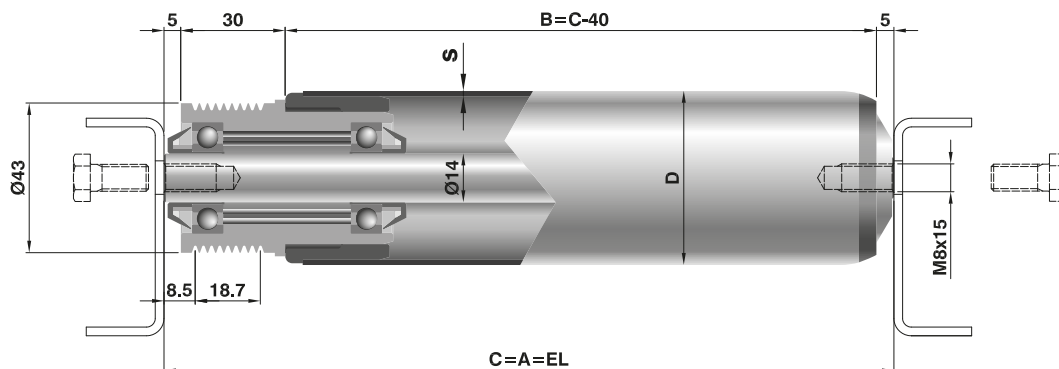
N Tube, normal steel

I Tube, AISI 304 stainless steel

P Lagged with soft PVC sheath

LOAD CAPACITY

Please refer to the Unit Handling master catalogue for the max. weight per roller.



DRIVEN ROLLERS

135/138 Series



Friction and fixed driven rollers with double groove pulley for round belts

These rollers have general characteristics corresponding to those of the 135 (driven) series and of the 138 (friction-operated) series, but with interchangeable pulleys instead of the toothed pinions.

The black polyamide pulleys with 2 grooves for round belts measuring \varnothing 4-5 mm have been stabilized and are particularly hardwearing and suitable for heavy duty. The rollers are supplied with 6002-2RZ precision radial bearings as standard, or stainless-steel bearings on request. They are available

in the galvanized steel tube version or by request in the AISI 304 stainless steel version. Use is normally permitted for ambient temperatures between -5°C and $+80^{\circ}\text{C}$. Performance depends on the characteristics, brand and type of belt used.

The antistatic version of these rollers must always be requested.

Remember that rollers lagged with PVC or polyurethane will not be antistatic. In such cases, the user must fit additional conductive devices that we cannot supply to prevent static electricity being generated on the packages and on the surface of the rollers.

Order code							s	Weight		Weight of rotating parts		Options	
Type	Shaft		Tube		Length C			C=200 daN	Per cm daN	C=200 daN	Per cm daN	Vers. per cm	Vers. Tube
135/F1	14	R	50	Z	130	1600	1.5	0.721	0.030	0.452	0.018	J-I	J-N-I-P
138/F1	14	R	50	Z	130	1200	1.5	0.721	0.030	0.452	0.018	J-I	J-N-I-P

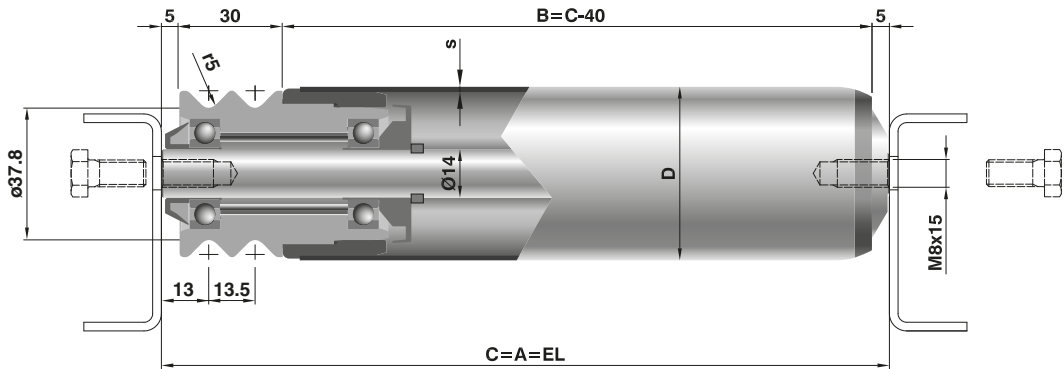
N.B. for clutch-operated rollers, do not exceed a speed of 0.5 m/s.

On request: antistatic version (COMPULSORY), version with AISI 440 stainless steel bearings. Versions with PVC sheath or other types of lagging reduce the thrust capacity of the clutch-operated rollers.

- Legend of version acronyms:
R Shaft, bored and threaded
J Shaft, electro-zinc plated
I Shaft, AISI 304 stainless steel
- Z** Tube, Sendzimir galvanized
J Tube, electro-zinc plated
N Tube, normal steel
I Tube, AISI 304 stainless steel
P Tube lagged with soft PVC

LOAD CAPACITY

Please refer to the Unit Handling master catalogue for the max. weight per roller.



DRIVEN ROLLERS

135/138 Series



Friction and fixed driven rollers with P2C pinion for light and medium loads

These rollers of the 135 (Driven) series and of the 138 (Friction-operated) series are interchangeable and are intended for use in RDR Drive Rollers for transmission to chain rings, with P2C pinion 2 crown sprockets, $\frac{1}{2}$ " Z=14. The pinions are made of black polyamide, that have been stabilized and are particularly hard-wearing and suitable for heavy duty, locked with a particular snap-in system into the element interposed at the end of the tube. 6002-2RZ radial precision bearings are supplied standard, or permanently lubricated stainless steel bearings. can be supplied. The bored and threaded shaft for fixing with screws makes the assembly rigid and more sturdier. The

tube can be galvanized steel or stainless steel, \varnothing 50, 1.5 mm thick. The package conveying speed can reach 1 m/s for driven rollers but the recommended maximum speed for friction-operated rollers is 0.5 m/s in order to limit prolonged accumulation time. Use is normally permitted for ambient temperatures between -5°C and $+80^{\circ}\text{C}$ for the driven rollers and -5°C to $+40^{\circ}\text{C}$ for the clutch-operated rollers. The anti-static version of these rollers must always be requested.

Remember that rollers lagged with PVC or polyurethane will not be antistatic. In this case, the user must fit additional conductive devices that we cannot supply to prevent static electricity being generated on the packages and on the surface of the rollers.

Order code							p	Z	Dp	s	Weight		Weight of rotating parts		Options	
Type	Shaft		Tube		Length C						C=200 daN	Per cm daN	C=200 daN	Per cm daN	Vers. per cm	Vers. on Tube
	d(ø)	vers.	d(ø)	vers.	min.	max										
135/S3	14	R	50	Z	130	1600	1/2"	14	57.07	1.5	0.721	0.030	0.452	0.018	J-I	J-N-I-P
138/S3	14	R	50	Z	130	1200	1/2"	14	57.07	1.5	0.721	0.030	0.452	0.018	J-I	J-N-I-P

On request: antistatic version (COMPULSORY), version with AISI 440 stainless steel bearings

Versions with PVC sheath or other types of lagging reduce the thrust capacity of the clutch-operated rollers.

Legend of version acronyms:

R Shaft, bored and threaded

J Shaft, electro-zinc plated

Shaft, AISI 304 stainless steel

Z Tube, Sendzimir galvanized

J Tube, electro-zinc plated

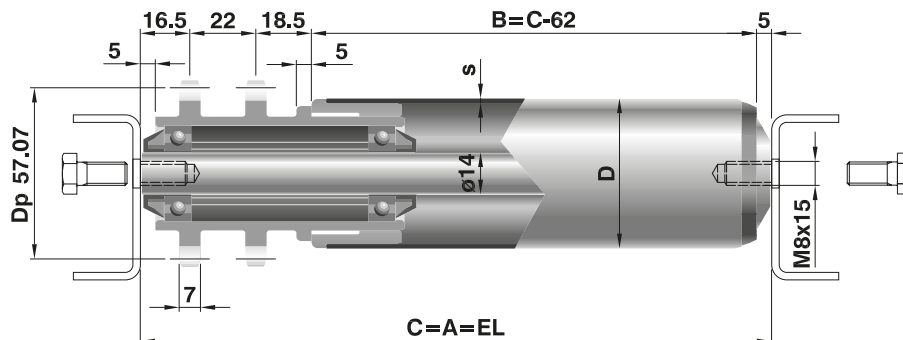
N Tube, normal steel

1 Tube, AISI 304 stainless steel

P Lagged with soft PVC sheath

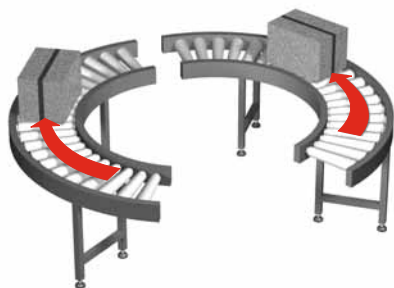
LOAD CAPACITY

For load capacity refer to the Drive Roller general data calculating 110 daN for length "C" as 1000 mm, 50 daN for length "C" as 1500 mm.



DRIVE ROLLERS AND TAPERED DRIVEN ROLLERS

KRO Series

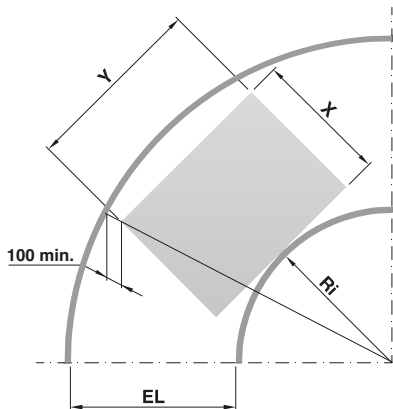


Choosing roller with curved sections

When choosing the type of roller, remember:

$$P_c \geq P$$

Also check the suitability for the environmental conditions (dust, humidity, corrosion, hygiene, etc.) and whether the thickness of the tube will withstand shocks and concentrated loads, taking into consideration that the use of rollers with greater diameter but the same size of bearing can reduce thrust force.



Roller length

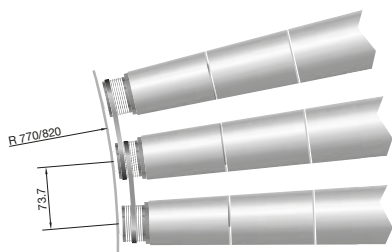
Tapered rollers should be used to make curves because they ensure flow and regular forward travel of the packages, avoiding as far as possible skidding provided that design criteria are complied with (internal radius, maximum pitch and angle between the rollers and the horizontal position (of the

upper surface of the rollers). The length of the rollers and thus the width of the conveyor on a curve is determined by the maximum dimensions of the packages:

$$C = X + 100 \text{ min.}$$

$$EL = C \text{ with ends fastened with screws.}$$

$$EL = \sqrt{(R_i + X)^2 + (Y/2)^2} - R_i + 100 \text{ min.}$$



To transmit motion from the tapered drive rollers to the tapered driven rollers, use only the Poly-V BELT-2PJ-75 (the reference number PJ286 is displayed on the belt).

TAPERED DRIVEN ROLLERS

KRO Series



Tapered rollers with grooves for transmission with round belts

They are obtained by fitting grey polypropylene tapered sleeves to the base roller with a 50 Ø galvanized tube. In the protruding part with a smaller diameter, 2 grooves are made in the steel tube for transmission with round belts measuring 4-5 mm Ø. The general characteristics are the same as for the KRO series (roller base 117), except for the different configuration of the cones.

The rollers are fitted with 6002 2RZ precision radial bearings and are supplied in the antistatic version (except for the polypropylene cones).

Use is normally permitted for ambient temperatures between 0° C and +50° C. They are available in length "B" in multiples of 50 only in the sizes indicated in the table below.

Type	Order code				Base roller	Length Bu	D (ø)	D (ø)	Ri	Total weight daN
	Shaft d(ø)	version	Tube d(ø)	version						
KRO/F2	12	R	65	ZFK	KRO-117	195	65.6	52.5	720	0.98
			71			245	72.0	55.8	770	1.16
			72			295	72.0	52.5	720	1.32
			77			345	78.5	55.8	770	1.53
			78			395	78.5	52.5	720	1.69
			84			445	85.0	55.8	770	1.91
			85			495	85.0	52.5	720	2.07
			90			545	91.3	55.8	770	2.31
			91			595	91.3	52.5	720	2.47
			96			645	97.6	55.8	770	2.72
			97			695	97.6	52.5	720	2.89
			103			745	104.0	55.8	770	3.16
			104			795	104.0	52.5	720	3.33
			109			845	110.3	55.8	770	3.62
			110			895	110.3	52.5	720	3.78

N.B: the user must remove or at least avoid the generation of static electricity on the packages and on the surface of the tapered sleeves by fitting appropriate additional conductive devices.

Legend of version acronyms:

R Shaft, bored and threaded

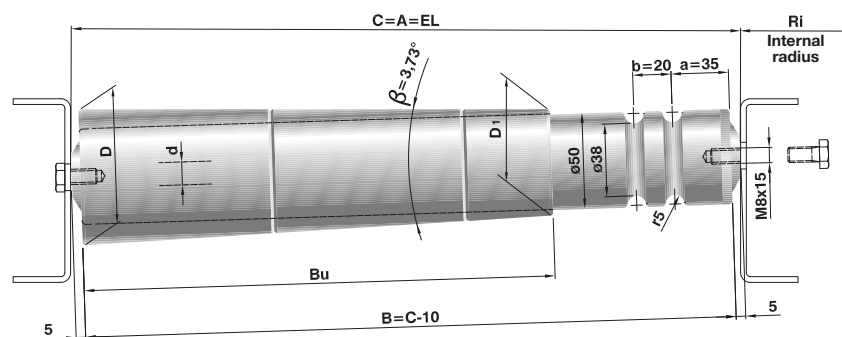
Z Tube, sendzimir galvanized

K Propylene tapered sleeves

F Tube with 2 grooves for round belts

LOAD CAPACITY

Please refer to the Unit Handling master catalogue for the max. weight per roller.



TAPERED DRIVEN ROLLERS

KRO Series



Driven tapered rollers with fixed pulley for transmission with flexible Poly-V belts.

These rollers have an innovative transmission system, are ideal for making curves in the conveying lines for packages, and are obtained by fitting polypropylene tapered sleeves.

The V pulley, 9 grooves, pitch J, (ISO 9982 DIN 7867), is snap-fitted on the side with a smaller diameter into the coupling head.

Transmission is only with Poly-V belt rings in the very flexible 2-rib version, for a roller

pitch within the curve, $l=73.7$ mm, BELT TYPE 2P J-75.

The number of Drive Rollers that can be used for each 90° section can be defined by analysing the application.

The pulley is made of black polyamide whereas the general characteristics are the same as those of the KRO series (base roller 135). The rollers are provided with precision radial bearings with the serial number 6002-2RZ.

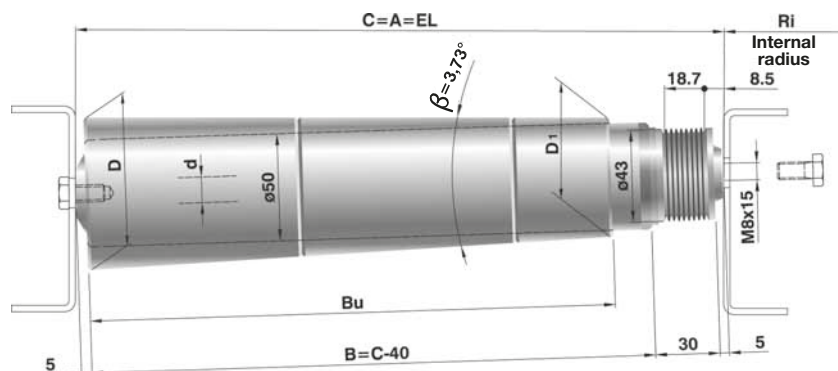
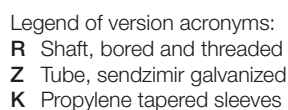
The antistatic version of these rollers must be requested (apart from the cones).

Order code						Base roller	Length Bu	D (ø)	D (ø)	Ri	Total weight daN
Type	Shaft		Tube		Length C						
	d(ø)	vers.	d(ø)	vers.							
KRO/MM	14	R	72	ZK	350	KRO-135	295	72.0	52.5	770	1.42
			77		400		345	78.5	55.8	820	1.54
			78		450		395	78.5	52.5	770	1.69
			84		500		445	85.0	55.8	820	1.81
			85		550		495	85.0	52.5	770	1.97
			90		600		545	91.3	55.8	820	2.04
			91		650		595	91.3	52.5	770	2.26
			96		700		645	97.6	55.8	820	2.38
			97		750		695	97.6	52.5	770	2.58
			103		800		745	104.0	55.8	820	2.70
			104		850		795	104.0	52.5	770	2.97
			109		900		845	110.3	55.8	820	3.03
			110		950		895	110.3	52.5	770	3.26

N.B: the user must fit additional conductive devices that we cannot supply to prevent static electricity being generated on the packages and on the surface of the tapered sleeves.

LOAD CAPACITY

Please refer to the Unit Handling master catalogue for the max. weight per roller.



TAPERED DRIVEN ROLLERS

KRO Series



Driven tapered rollers with double groove pulley for transmission with round belts

The innovative transmission system using a round belt positioned to the side of the roller is ideal for making curves in conveyor lines for light and medium-weight packages. These rollers have a pulley housing the round belt transmission system and obtained by fitting polypropylene tapered sleeves. The pulley with 2 grooves for transmission of round belts measuring 4-5 mm Ø is snap-fitted into the coupling head of the base roller.

A 90° curve can provide rollers connected together by round belts to a minimum of 2 Drive Rollers.

The pulley is made of black polyamide whereas the general characteristics are the same as those of the KRO series (roller base 135). The rollers feature 6002-2RZ precision radial bearings.

The antistatic version of these rollers must be requested (apart from the cones).

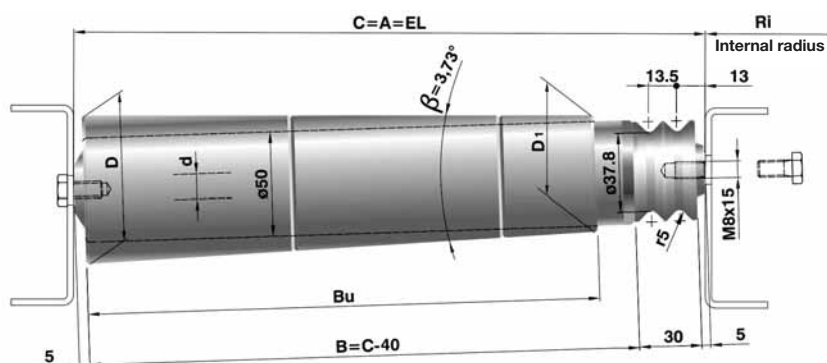
Type	Order code				Base roller	Length Bu	D (ø)	D (ø)	Ri	Total weight daN
	Shaft d(ø)	vers.	Tube d(ø)	vers.						
KRO/FM	14	R	72	ZK	KRO-135	295	72.0	52.5	770	1.42
			77			345	78.5	55.6	820	1.54
			78			395	78.5	52.5	770	1.69
			84			445	85.0	55.6	820	1.81
			85			495	85.0	52.5	770	1.97
			90			545	91.3	55.6	820	2.04
			91			595	91.3	52.5	770	2.26
			96			645	97.6	55.6	820	2.38
			97			695	97.6	52.5	770	2.58
			103			745	104.0	55.6	820	2.70
			104			795	104.0	52.5	770	2.97
			109			845	110.3	55.6	820	3.03
			110			895	110.3	52.5	770	3.26

N.B: the user must fit additional conductive devices that we cannot supply to prevent static electricity being generated on the packages and on the surface of the tapered sleeves.

Legend of version acronyms:
R Shaft, bored and threaded
Z Tube, sendzimir galvanized
K Propylene tapered sleeves

LOAD CAPACITY

Please refer to the Unit Handling master catalogue for the max. weight per roller.



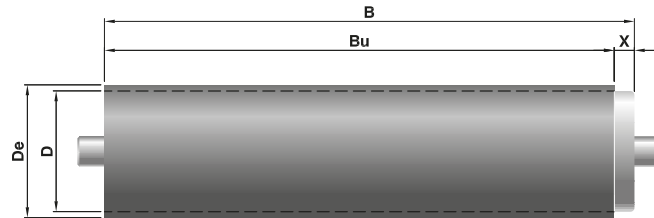
SLEEVING / LAGGING

Rollers lagged with PVC sleeving

All the tube versions listed in this catalogue can feature a soft and elastic PVC (polyvinyl chloride) sleeve covering with 73 Sh(A) hardness, of a metallic grey colour (RAL 9006) with a smooth surface that is particularly resistant to chemical agents

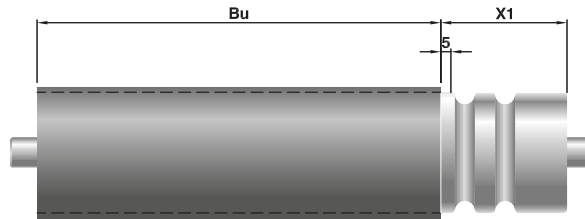
It is normally used to provide greater friction between the package and roller without marking the conveyed materials. The sleeve is placed on the tube and remains in place by elastic shrinkage.

Operating temperature from -10°C to +50°C.



Rollers with rubber lagging

Consists of (hot) anti-abrasive vulcanized rubber lagging, hardness 70 ± 5 Sh(A), machined surface, thickness: 3 mm minimum. On request, the lagging can be obtained with different hardness or thickness or with glued rubber or neoprene, silicone etc., if this is compatible with the quantity of rollers requested. The R letter must be added to the tube version of the pre-chosen roller.



Sleeves with greater friction

If it is necessary to create greater friction between the rollers and the conveyed packages, applying sleeves with greater friction is particularly effective.

They are made of transparent polyurethane 75 Sh(A) with grooves parallel to the axis of

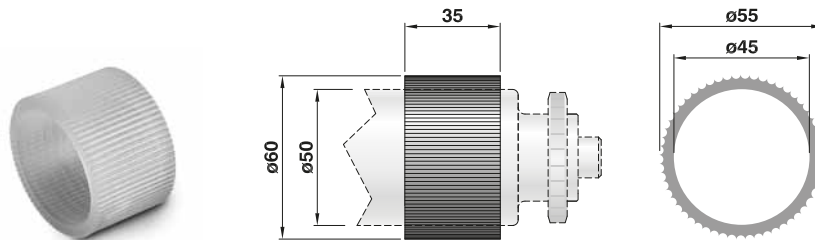
the roller and are supplied loose to be fitted tight only onto rollers with Ø50 tube and can be combined with all the roller/ Drive Roller versions of this catalogue.

Fit additional conductive devices that we cannot supply to prevent static electricity

being generated by the packages rubbing on the sleeves.

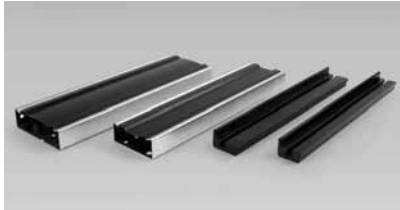
Code : SVGN-00050

Description : Sleeves D.45/55 L=35



Note: tapered rollers, or rollers lagged with sheaths, rubber, or sleeves have a larger diameter than the standard 50 of the Drive Roller, thus the speeds of every reduction of the Drive Roller will increase and the torque/tangential force will decrease proportionally.

PROFILES FOR DRIVEN CONVEYORS

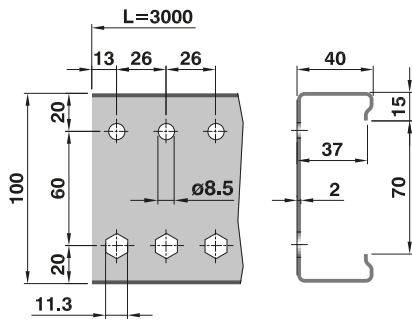


Profiles CP1 and CP2 can be supplied untreated or can be subjected to electrolytic galvanization.

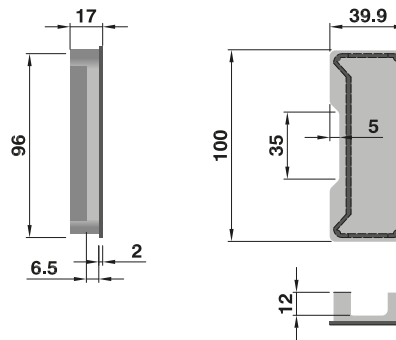
In combination with the P5 and P6 profiles, the relative lagging in grey PVC and the closing caps in black polyethylene can be supplied. The CP1 and CP2 profiles are particularly suitable for making both driven

and friction-operated roller conveyors of the 135 and 138 series, with chain or belt or timing belt transmission.

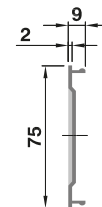
Warning: all the profiles must be cropped to obtain the first hole with the centre 13 mm from the end; the length values "L" are accordingly purely nominal.



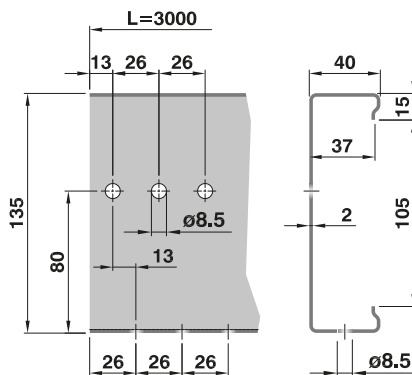
Profile
PR CP1 3000 (untreated)
PR CP1J 3000 (galvanized)
Weight = 9.50 daN



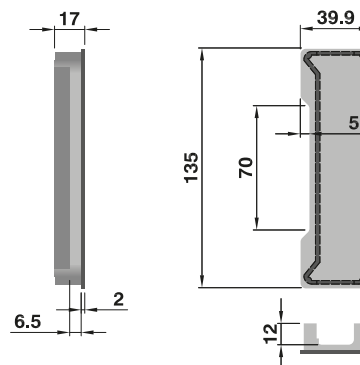
Cap KR32
RMSP-00138
Weight = 0.012 daN



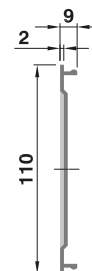
Guard L3000
PR P5 3000
Weight = 0.75 daN



Profile
PR CP2 3000 (untreated)
PR CP2J 3000 (galvanized)
Weight = 11.00 daN



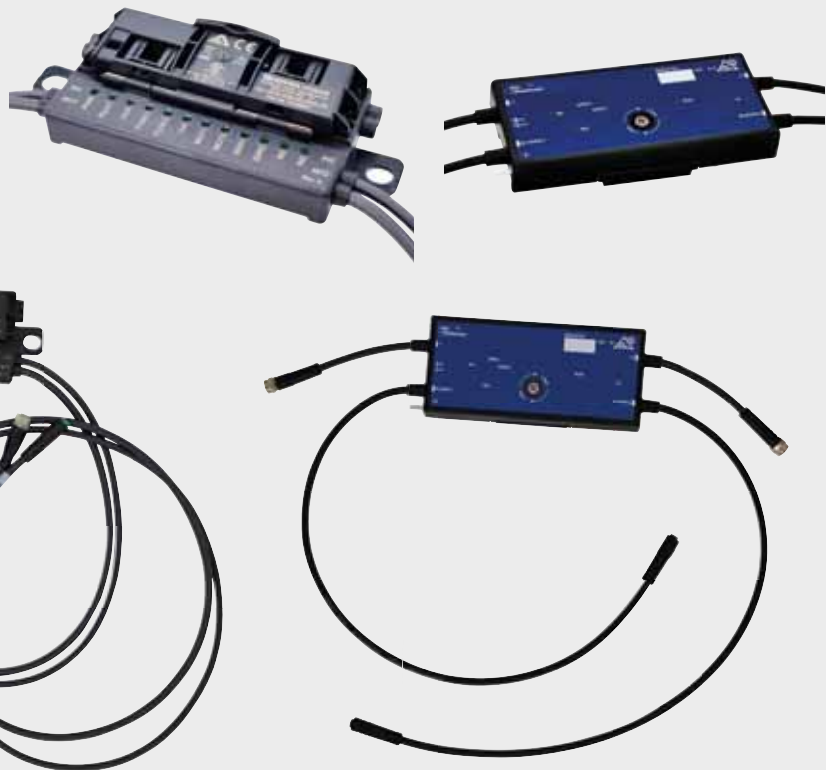
Cap KR31
RMSP-00137
Weight = 0.017 daN



Guard L3000
PR P6 3000
Weight = 0.75 daN

INTERFACE BOARDS

It's possible to use market boards for interfacing RDR-BL3 drive roller.
These boards are from different products and use different logic/protocols (IO-Link, ASi-3, ASi-5).
For more informations please contact:
info-rdr@rulmeca.com.



RDR BL3 DRIVE ROLLERS CODE

	RDR	BL3-PV	-	16	R	I	50	JF	1234
Series									
Type									
BL3									
BL3-PV									
BL3-F1									
BL3-S3									
BL3-PV11D									
Connector									
-									
S									
Reduction ratio									
12:1									
16:1									
24:1									
36:1									
49:1									
64:1									
96:1									
Version									
-									
R									
Pins version									
I									
Tube									
50									
51									
52									
53									
Tube finish and options									
N									
Z									
I									
E									
F									
P									
Pu									
K									
R									
Roller length C (= EL internal distance between the frames)									

RDR RULMECA DRIVE ROLLER - DATA GATHERING FORM

Customer: _____ Reference: _____

Telephone: _____ Email: _____

Commercial ref: _____ Agency: _____

Data on roller conveyor

Conveyor length [m]: _____ "C" dimension of roller support profile [mm]: _____ Linear speed [m/s]: _____

Roller pitch [mm]: _____ Length of accumulation area [m]: _____ Load: ☐ Maximum ☐ Minimum ☐ Average

☐ Change of direction request ☐ Inclined roller conveyor [mm, degrees]: _____ Work cycle: ☐ Continuous ☐ Intermittent

No of Starts-Stops/min: _____ ☐ Managed accumulation without pressure ☐ Transfer ☐ Accumulation with pressure

Notes: _____

Data on package or material to be conveyed

Max. / min. package dimensions (Length x depth x height) [mm] _____ / _____ Leading face: ☐ L ☐ p

Max./Min. weight of package [kg]: _____ / _____ Total weight on roller conveyor [kg]: _____

Type of material in contact with the rollers: ☐ Plastic ☐ Cardboard ☐ Wood ☐ Other (Specify) _____

Finish of the base of the packages in contact with the rollers: ☐ Stiff ☐ Soft ☐ Smooth ☐ Coarse ☐ Flexible

Notes: _____

Environmental data

Max / min [°C] ambient temperature _____ / _____ Temperature of conveyed package [°C] _____ / _____

Environment: ☐ Dry ☐ Humid ☐ Wet ☐ Corrosive ☐ Washes ☐ Detergents ☐ High pressure ☐ Steam

Conveyed material ☐ Dry ☐ Humid ☐ Wet ☐ Abrasive ☐ Other

Notes: _____

Requested Drive Roller options

☐ Electro-zinc plated tube (Bright) ☐ Sendzimir galvanized tube ☐ Untreated tube ☐ Surface treatment _____

☐ Vulcanized rubber thickness [mm] _____ Hardness [ShA] _____ Colour _____ ☐ Q Soft PVC sheath Thickness 2.5, 70 ShA

☐ Tapered Drive Roller

Other: _____

Additional functional considerations

Drawing of system and considerations

- Enclose a technical drawing or layout of the planned system and possibly a wiring diagram.
- State the required conditions for the cabling and filters on the power supply (filters on relay-remote switch coils)
- Technical manuals can be downloaded from: <https://www.rulmeca.com/en/>



Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

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Rulmeca Holding S.p.A

Via A. Toscanini 1 - I-24011 Almè (BG) Italy - Tel. 035 430 0111 - export-it@rulmeca.com

Please contact your local Rulmeca Company, you will find our contact details in our web site: **rulmeca.com**