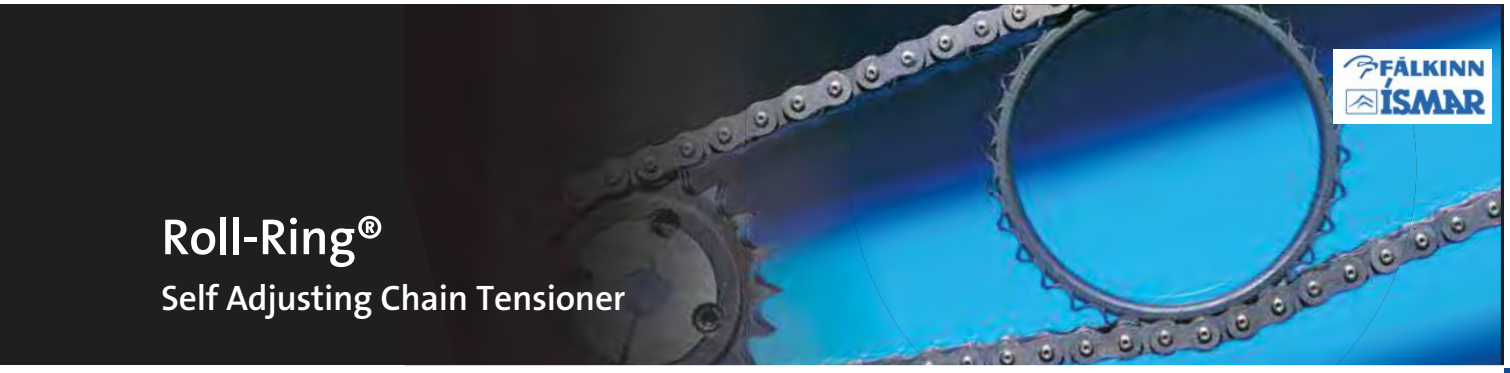


Roll-Ring®

Self Adjusting Chain Tensioner

Roll-Ring® is a simple yet innovative chain tensioner made from a specially formulated polymer.

The unique design is based upon a simple toothed ring that can be fitted to horizontal, vertical or diagonal drives in a matter of seconds, simply by placing it in-between the two strands of chain. When the drive is in use, the Roll-Ring® deforms to an elliptical shape, due to compression between the strands and completely asborbs any slack in the system. Roll-Ring® performs the job of a tensioner and a damper in one, and is ideally suited to applications where maintenance is difficult or impossible.

Technical details

Roll-Ring® chain tensioners provide tensioning using:

- Static tensioning force from the elastic ring
- Dynamic tensioning force from the damping of the working material

Benefits

The Roll-Ring® chain tensioner provides cost effective, time saving installation and maintenance.

The advantages over other types of chain tensioners are:

- Free standing - no sprockets, bolts, plates, drilling or costly installation required
- The Roll-Ring® is easily installed where space limitations prohibit the use of conventional chain tensioners
- The Roll-Ring® is fitted in a matter of seconds
- It is ready for use without any tools, tensioning equipment or any further alignment or adjustment
- It is fully effective in vertical and diagonal drives
- The Roll-Ring® works automatically, is maintenance free and self lubricating
- It can be used in dusty and dirty environments
- The Roll-Ring® is a tensioner and damper in one, thus reducing noise levels
- Roll-Ring® also works in reverse mode

Roll-Ring® chain tensioners reduce chain wear and improve the quality and efficiency of the complete chain drive.

The innovative tensioner

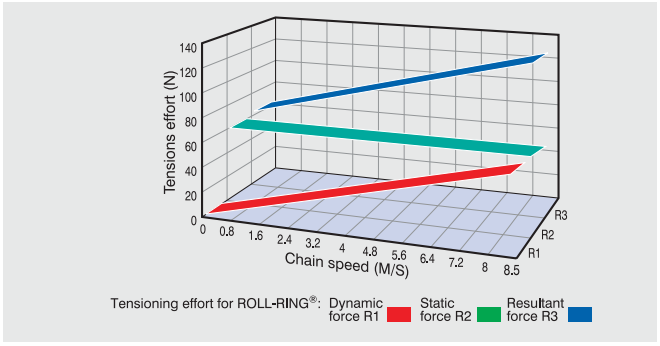
The Roll-Ring® chain tensioner is an elementary mechanism based on new principles and represents a major advance in technology:

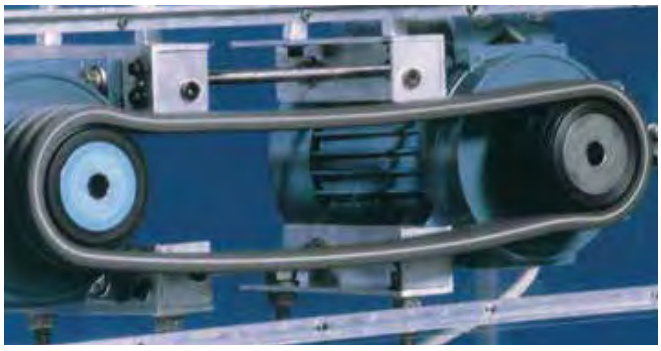
- Roll-Ring® requires minimal technical effort
- Its operation is astonishingly simple
- All functions are integrated into a single component
- Roll-Ring® utilises the hollow space of the associated chain drive system giving greater flexibility to designers and specifiers
- Automatic positioning and self lubricating

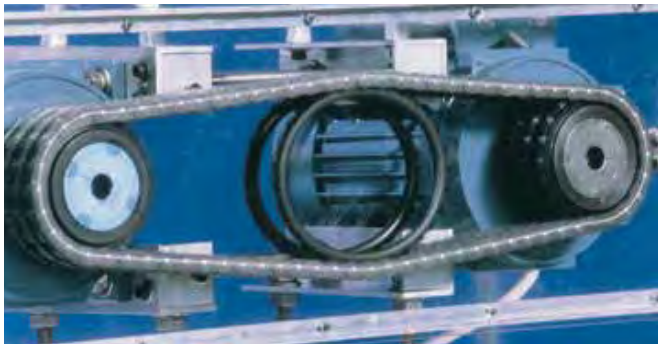
Bottom:
Snap-in installation
▼

Top:
Vibrations in an untensioned chain drive
▼

Bottom:
The Roll-Ring® chain tensioner tensions and dampens
▼







Roll-Ring®

Self Adjusting Chain Tensioner

Case study: chocolate production

A major chocolate manufacturer was experiencing serious problems with short chain life on a main production line and also had chain tensioning problems, due to the inaccessibility of the chain drives. Firstly, the short chain life (4-5 weeks) was overcome when the Renold Engineer recommended a change to nickel plated chains, which led to a new chain life of more than twelve months.

Secondly, regular downtime due to the failure of the previous chains was extended through the fitting of chain tensioners and their ongoing adjustments over time. With a time sensitive maintenance policy, the chocolate manufacturer looked for a solution to speed up the tensioning of the replacement chain and Roll-Ring® provided that simple solution.

The new Renold chain had to be adjusted to be near their ideal centres when fitted, and when the maximum compression was reached the Roll-Ring® was fitted by hand within seconds.

No further adjustments had to be carried out due to the flexibility of the Roll-Ring® design and all future chain extension is automatically taken up during the chain's life. With a large reduction in equipment downtime for tensioning adjustment, the chocolate manufacturer now enjoys significant time savings, cost savings and peace of mind.

- Saving of maintenance time for tension adjustments
- Simple installation
- Effective dampening
- Unique solution

The new principle

The principle of the Roll-Ring® chain tensioner is based on two simple phenomena:

- The elastic ring engages with the chain drive strands and rolls between them in a pre-stressed condition taking up the shape of an ellipse
- The constantly opposing movements of the load and slack strands cancel each other out, thereby holding the Roll-Ring® in position

Installation and maintenance

Roll-Ring® chain tensioners are maintenance free and can be fitted to a wide variety of chain drives with no installation down time.

The requirement is that:

- There is a working space with a gap between the chain strands which is smaller than the reference diameter of the chain tensioner
- There is a sufficient gap between the chain drive sprockets

We recommend that the chain tensioner is positioned between two chain strands such that there is at least one chain pitch between the Roll-Ring® and the smallest sprocket. The Roll-Ring® can also be positioned just as effectively outside this recommended area, as long as it is sufficiently prestressed. In this case, practical trial and error are recommended.

Roll-Ring® chain tensioners can be used in line within the same chain strand, or parallel with each other in multi-strand chain drives.

Please note that triplex chain drives only require two Roll-Rings® positioned on the outer strands.

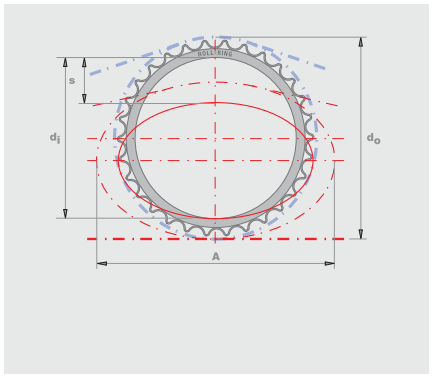
Roll-Ring® installation and final dimensions

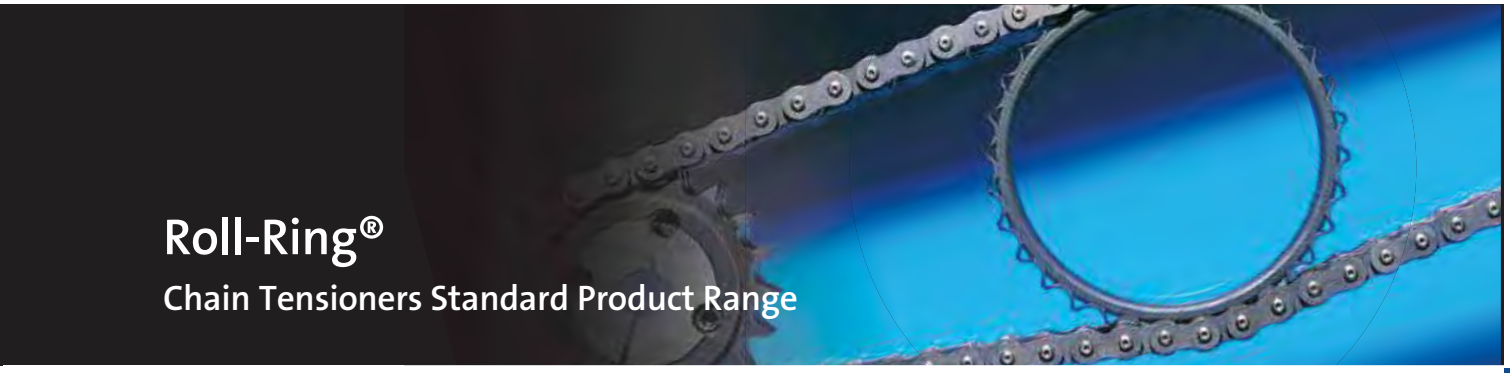
Part No.	do	di	s	
10503001	76.5	65.0	20.0	104.0
10603001	91.1	73.0	25.0	122.0
10603601	109.0	89.5	25.0	143.0
10802601	102.1	84.5	24.0	135.8
10803001	148.0	98.0	28.0	161.6
10803401	170.0	115.4	30.0	165.0
11002601	128.4	105.0	28.0	153.0
11003001	148.0	124.6	33.0	177.0
11003401	170.0	141.0	38.0	217.0
11202601	155.0	127.6	35.0	209.5
11203001	182.2	145.0	40.0	241.7
11203401	207.5	169.5	45.0	265.0
11602601	207.0	167.0	45.0	269.0
11603001	245.8	202.0	50.0	306.0
12003001	303.7	244.0	60.0	390.0

Value A includes a safety distance to the sprockets

Roll-Ring® chain tensioners in one of our test rigs ▼

Roll-Ring® chain tensioners are re-cyclable ▼





Roll-Ring®

Chain Tensioners Standard Product Range

Part No.	No. of teeth	ISO reference	Maximum static expansive force ** (NEWTONS)	Maximum chain speed (M/S)	Minimum ambient temperature ~ (°C)	Maximum ambient temperature ~ (°C)	Resistant to ultra violet light
10503001	30	05B	2.900	5.000	-20	70	Normal
10603001	30	06B	15.200	5.200	-20	70	Normal
10603601	36	06B	28.500	5.200	-20	70	Normal
10802601	26	08B	15.700	7.500	-20	70	Normal
10803001	30	08B	22.000	8.600	-20	70	Normal
10803401	34	08B	22.000	8.800	-20	70	Normal
10843001	30	081 \ 083*	16.800	7.500	-20	70	Normal
11002601	26	10B	28.200	4.200	-20	70	Normal
11003001	30	10B	23.000	8.800	-20	70	Normal
11003401	34	10B	45.100	8.800	-20	70	Normal
11202601	26	12B	39.200	5.400	-20	70	Normal
11203001	30	12B	65.000	6.200	-20	70	Normal
11203401	34	12B	70.500	6.400	-20	70	Normal
11602601	26	16B	95.700	5.700	-20	70	Normal
11603001	30	16B	108.500	6.200	-20	70	Normal
12003001	30	20B	194.000	7.000	-20	60	Normal
10603001	30	35	5.700	5.200	-20	70	Normal
10802601	26	40	15.200	7.500	-20	70	Normal
10803001	30	40	22.000	8.600	-20	70	Normal
10843001	30	41	16.800	7.500	-20	70	Normal
11002601	26	50	28.200	4.200	-20	70	Normal
11003001	30	50	23.000	8.800	-20	70	Normal
11003401	34	50	45.100	8.800	-20	70	Normal
11202601	26	60	39.200	5.400	-20	70	Normal
11203001	30	60	65.000	6.200	-20	70	Normal
11602601	26	80	95.700	5.700	-20	70	Normal
11603001	30	80	103.000	6.600	-20	70	Normal
12003001	30	100	194.000	7.000	-20	60	Normal
20802601	26	08B	13.500	7.100	-20	70	High#
20803001	30	08B	20.400	7.400	-20	70	High#
20843001	30	081 \ 083*	15.400	6.800	-20	70	High#
21003001	30	10B	20.000	7.800	-20	70	High#
21202601	26	12B	37.000	5.000	-20	70	High#
21203001	30	12B	52.000	5.600	-20	70	High#
21603001	30	16B	100.600	5.800	-20	70	High#
22003001	30	20B	165.800	6.300	-15	60	High#

\# Ultra Violet resistant Roll-Rings® for use in equipment where the Roll-Ring® is exposed to Ultra Violet Light ie. agricultural machinery, community service equipment, building machines etc

~ For special operational temperatures lower or higher than those listed please consult Renold.

* To fit all roller chain widths from 1/8 to 5/16".

** At 20°C maximum adjustment, without dynamic expansive force proportional to chain speed.

NB Ultra Violet resistant Roll-Rings® have different mechanical properties to the standard Roll-Ring® which could result in a lower service life.

The above information is based on current knowledge and experience, we reserve the right to make modifications as part of our technical product improvement programme.

Registered trademark 641 683 from Ebert Kettenspanick GmbH.

The range of ROLL-RING® products continues to increase. Please consult Renold to discuss your particular requirements.

Industries

Typical applications:

- Agricultural machinery
- Baggage handling
- Cardboard manufacture
- Chocolate manufacture
- Ground compression machines
- Kiln conveyors
- Manufacture of drive systems
- Manufacture of pressing plants
- Paper cutting machines
- Printing machines
- Road building machines
- Robotics
- Roller drive systems
- Tile manufacture
- Transport systems
- Wood chip conveying