

**ROLLON®**  
BY TIMKEN

*0-Rail*



# We design and produce in order to support you

*An international group  
for technology,  
a local support for service*

*Over 40 years of know how  
in design and production*

Values

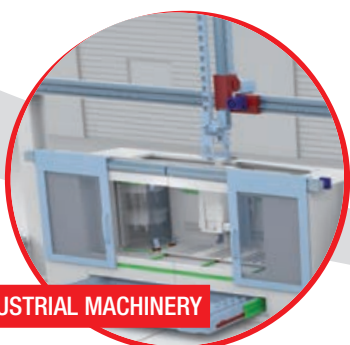
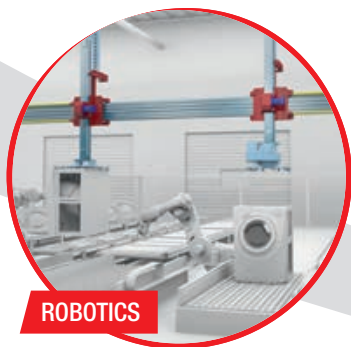
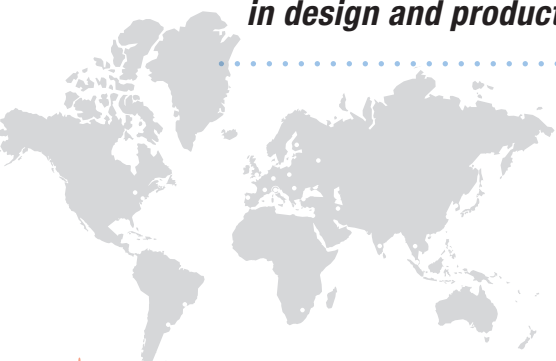
Applications

ROBOTICS

INDUSTRIAL MACHINERY

LOGISTICS

RAILWAY





## Collaboration

***High level technical consulting***

***Cross competences in several industrial sectors for an effective problem-solving***

## Solutions

***From a full range of standard products to fit-to-customer solutions for best performances***

**AERONAUTICS**

**SPECIAL VEHICLES**

**MEDICAL**

**INTERIORS AND ARCHITECTURE**

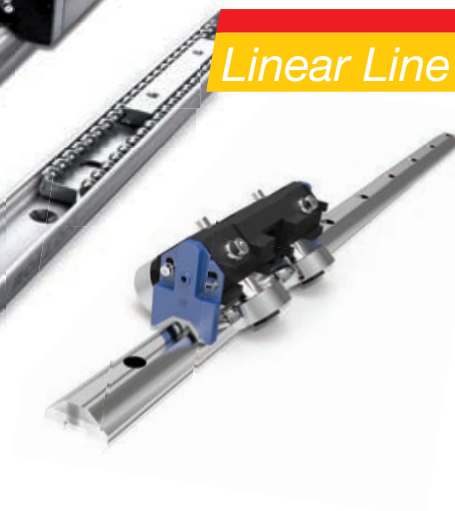


# A complete range for linear motion which reaches every customer



**Linear and curved guides with ball and roller bearings,** with hardened raceways, high load capacities, self-alignment and capable of working in dirty environments.

## *Linear Line*



## *Telescopic Line*

**Telescopic guides with ball bearings,** with hardened raceways, high load capacities, and low bending, resistant to shocks and vibrations. For partial, total or extended extraction up to 200% of the length of the guide.



## Actuator Line

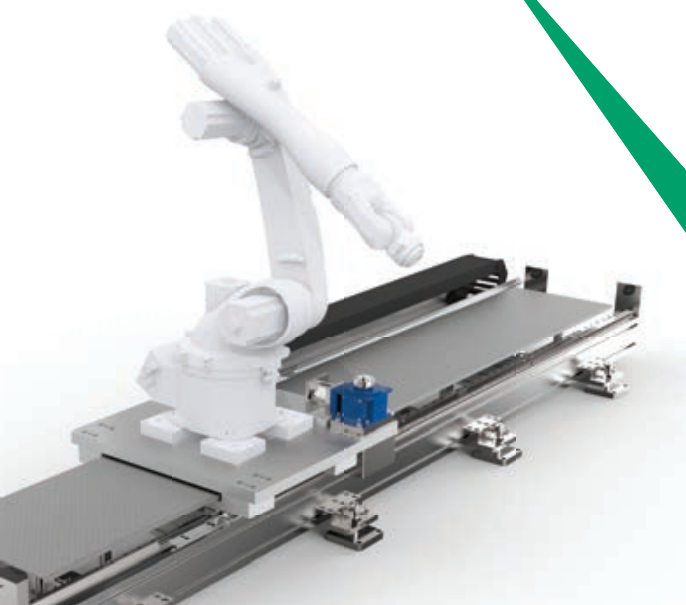
**Linear actuators with different guide configurations and drives,** available with belt, screw or rack and pinion drives according to different needs in terms of precision and speed. Guides with bearings or ball recirculating systems for different load capacities and critical environments.

*A global provider  
of solutions  
for applications  
for linear motion*



## Actuator System Line

**Integrated actuators for industrial automation,** they find applications in numerous industrial sectors: from machinery servo systems to high precision assembly systems, packaging lines and high speed production lines. It has evolved from Actuator Line series in order to meet the most demanding needs of our customers.



## > **O-Rail**



### **1 Product explanation**

O-Rail - unique assembly possibilities, FXRG series

OR-2

### **2 General characteristics**

Configurations

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### **3 Dimensions and load capacity**

FXRG series

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Rollers for FXRG

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Mounting configurations

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### **Ordering key**

## Product explanation



### > O-Rail - unique assembly possibilities



Fig. 1

The roller linear system O-Rail offers the maximum flexibility configuration due to the original shape of the guide with 3 raceways arranged at 90 ° to each other where on each of those can slide rollers R..43G series. Using a single guide, two, or more parallel guides, gives rise to a number of combinations capable of satisfying each specific need for linear motion and offering exceptional self-alignment capacity. O-Rail is constructed in high strength steel hardened with hardening treatments, for a further improvement of both performance and durability.

O-Rail is designed to be a strong and simple multitask linear system for larger handling and automation applications. It is an easy to assemble system, that offers smooth motion even on inaccurate surfaces.

### > FXRG series

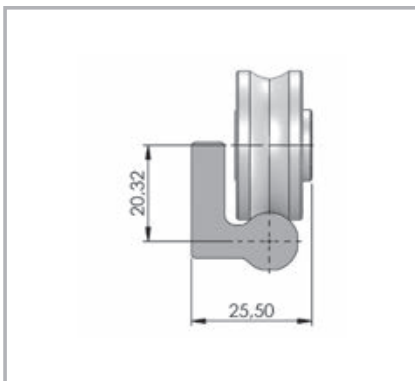


Fig. 2

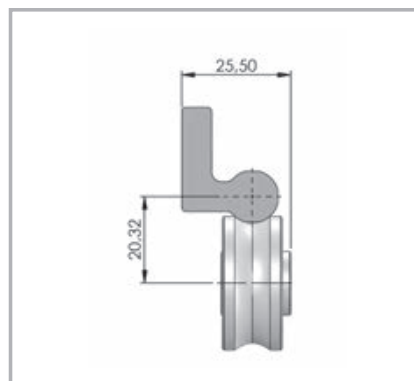


Fig. 3

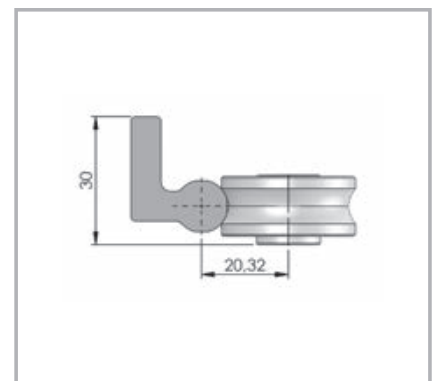


Fig. 4

## General characteristics



New geometrical design of the contact areas, based on Gothic arch raceways

- Superior sliding
- Very low friction
- Long lifetime
- Greater load capacity
- Very compact design

New rollers, double row bearings, with increased thickness of outer ring, gothic profile and finished raceways.

- Increased load capacity
- Increased lifetime
- Extremely low noise
- High speed
- Lubricated with low-temperature grease  
temperature range  $-40^{\circ}\text{C}$  to  $+130^{\circ}\text{C}$
- Neoprene lateral seals for dust protection

Self-aligning system when using two parallel rails, compensating large assembly inaccuracies on both longitudinal and transversal plane.

- allow for installation on non precise structures - welded carpentry or aluminium frame structures
- Do not require machined fixing surfaces for installation.  
Cost saving, as easy and fast assembly

Patented process Rollon-Nox, to further improve the rail material and thermochemical hardening treatment of deep nitriding and post-oxidation black for an effective corrosion protection.

- Very high hardness
- Resistance to heavy loads
- Very low wear
- Effective corrosion protection
- Smooth black finish

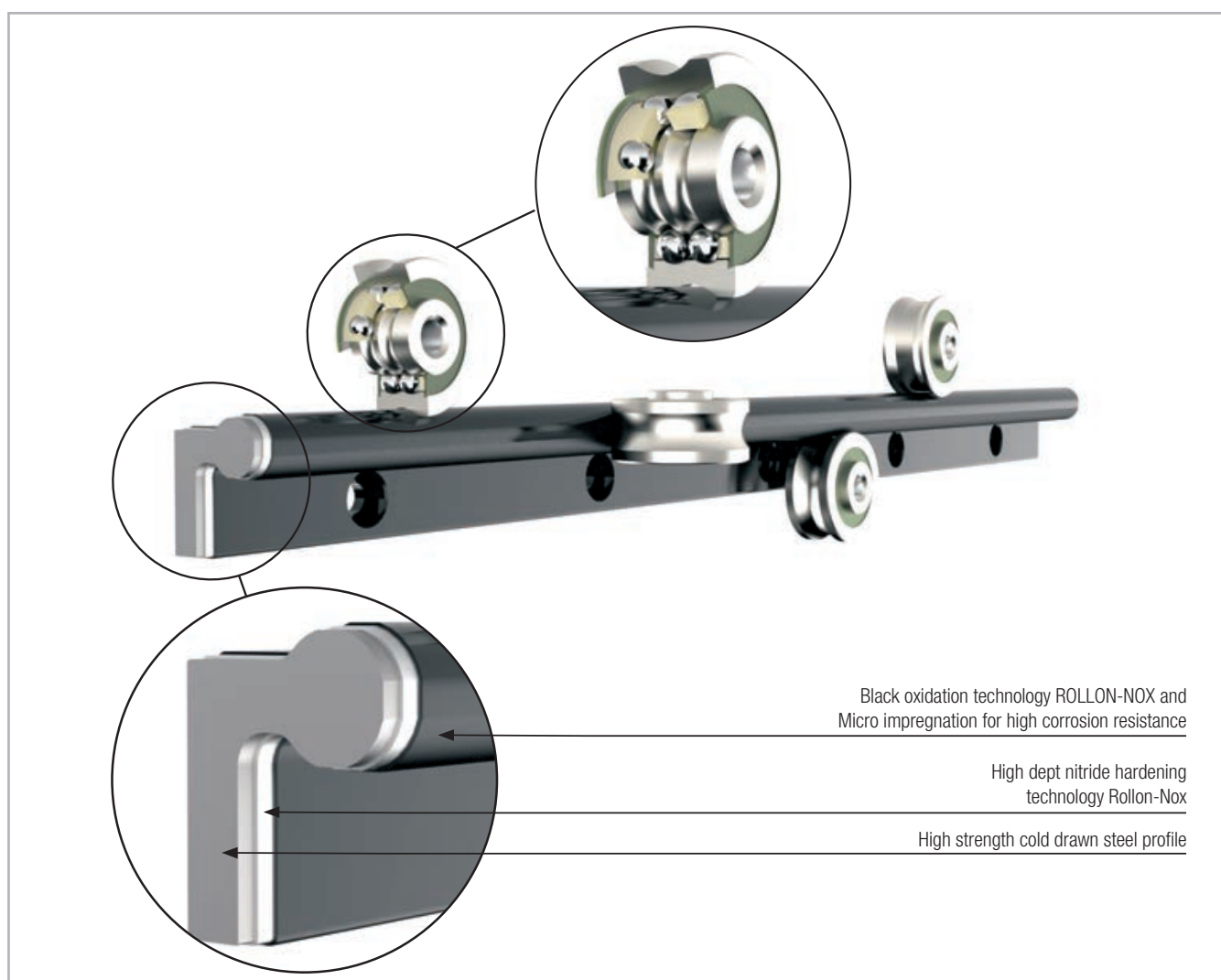


Fig. 5



### > Configurations

The FXRG allows a wide range of configurations when using two or more rails in parallel. Depending on required load and moment capacities/direction more single rollers and standard sliders are used to obtain

unique Self-aligning systems. Contact ROLLON for eventual support in dimensioning customized systems .

**FXRG with guiding slider with limited rotational capacity**

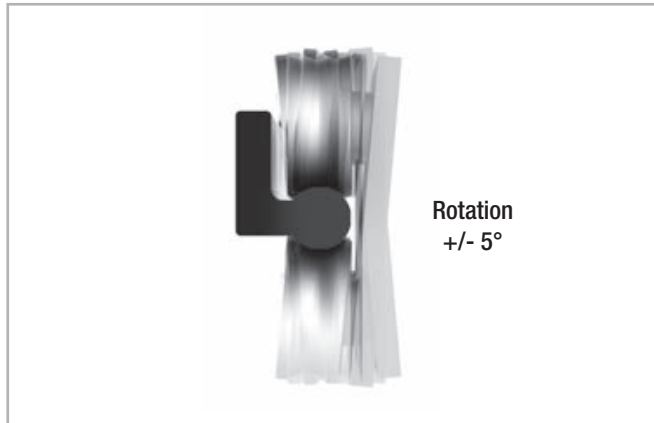


Fig. 6

**Combination of two FXRG with resting load**

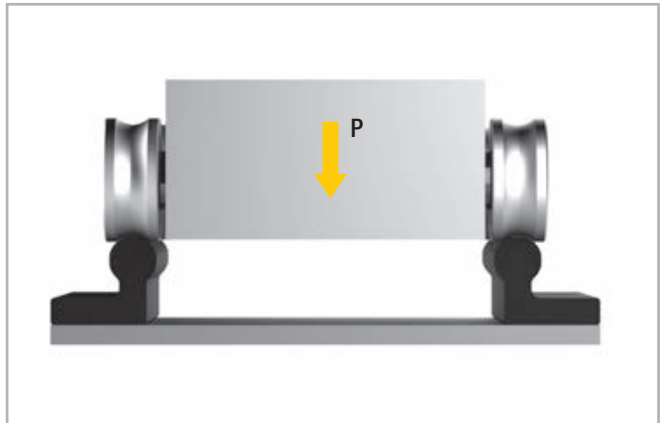


Fig. 7

**Configuration with two parallel FXRG with self-aligning capacity**

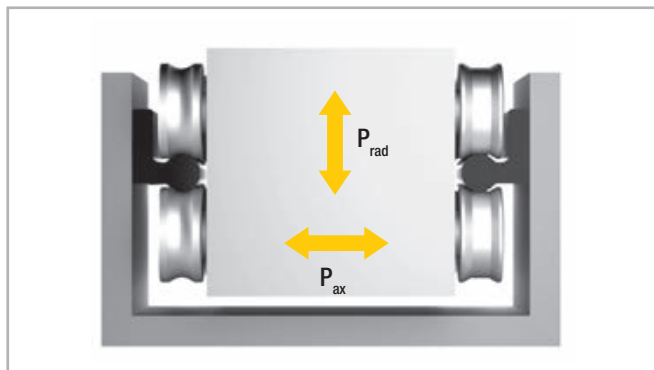


Fig. 8

**Configuration with two FXRG to form a single rail with a slider allowing for high  $M_x$  moments**

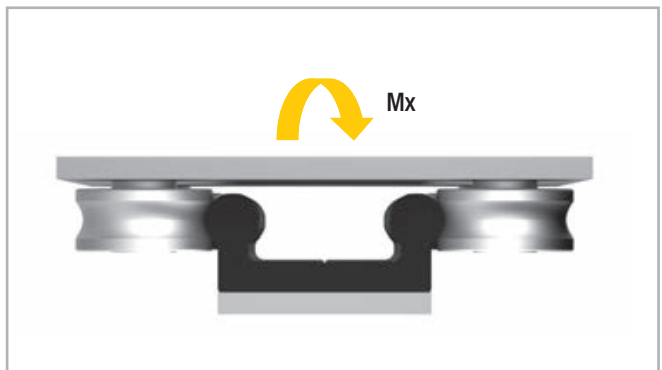


Fig. 9

**Telescopic configuration**

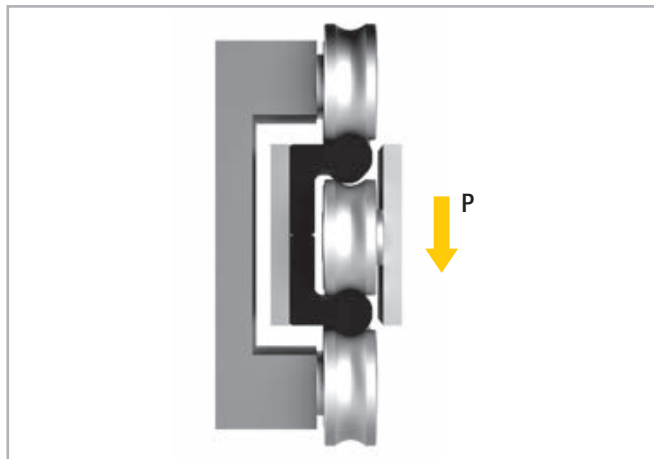


Fig. 10

Composed of two FXRG rails with rollers in between the rails fixed to mobile part and rollers on fixed structure running on outer raceways, providing a customized solutions for telescopic movements.

**Configuration of two FXRG**

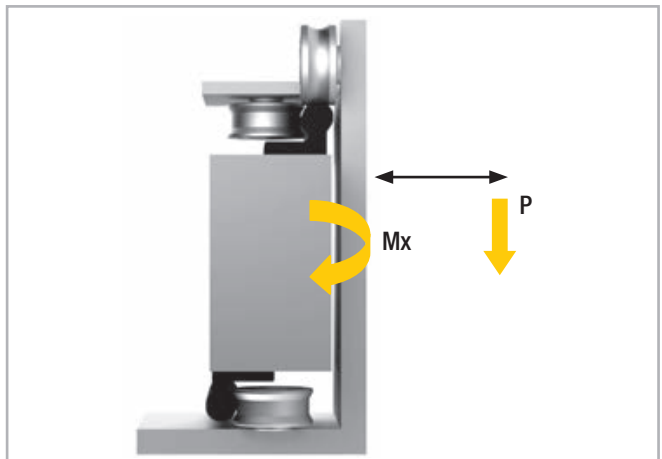


Fig. 11

With high cantilever load capacity, meanwhile Self-aligning.

## Dimensions and load capacity



### > FXRG series

FXRG is a high precision cold drawn profile of high strength steel. After a high depth nitride hardening treatment the rails are oxidized, assuring high hardness and excellent corrosion resistance. The characteristic black color on the whole rail is the result of oxidation and subsequent process

of micro-impregnation with oils and substances for improved smoothness and long life. The fixing holes are for standard M6 cylindrical low head screws, DIN 7984, with 80mm pitch.

#### Position of guiding roller - Concentric RCV43G on the three raceways

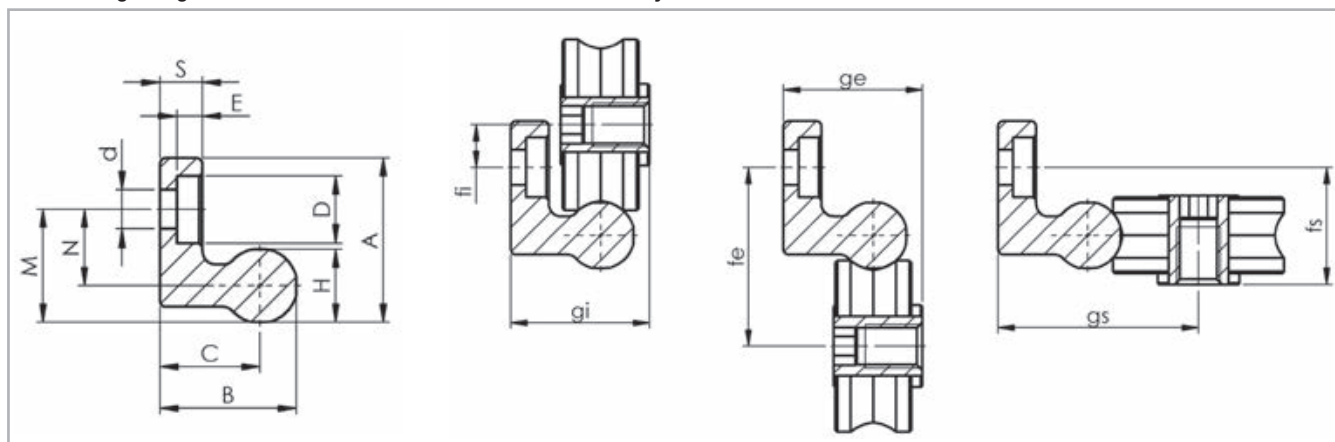


Fig. 12

Type	A [mm]	B [mm]	S [mm]	H [mm]	C [mm]	d [mm]	D [mm]	E [mm]	Screw type	M [mm]	N [mm]	Weight [g]
FXRG	27,02	22,52	7,00	12,04	16,50	6,50	11,00	4,20	M6 DIN 7984	18,52	12,50	2,48

Tab. 1

#### Axial movement of floating roller R.P43G with FXRG

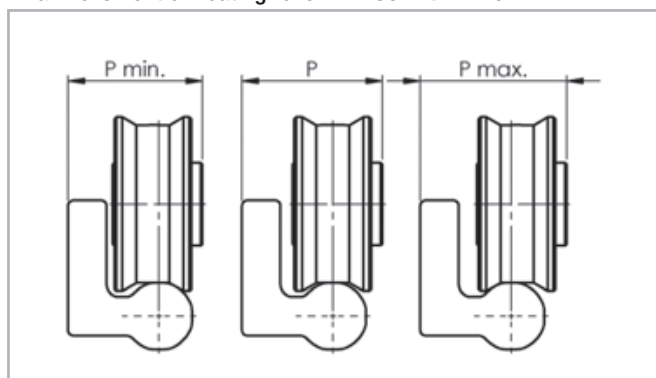


Fig. 13

#### Rotation of guiding roller R.V43G on FXRG

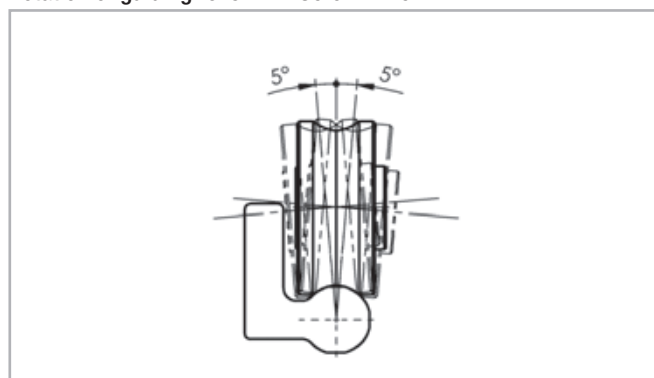


Fig. 14

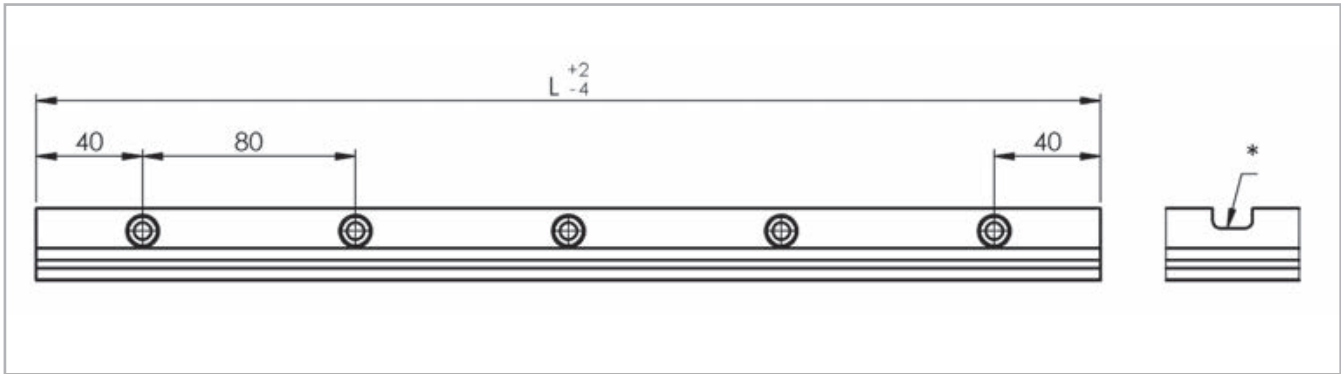
Type	P [mm]	movement	P <sub>min</sub> [mm]	P <sub>max</sub> [mm]
FXRG	25,50	+/-1	24,50	26,50

Tab. 2

fi [mm]	gi [mm]	fe [mm]	ge [mm]	fs [mm]	gs [mm]
7,82	25,50	32,82	25,50	21,50	36,82

Tab. 3

Avialable lengths



\*Version FXRG-...-C with additional slot

Fig. 15

Dimensions

Rail codes	Length L [mm]
FXRG	400 - 480 - 560 - 640 - 720 - 800 - 880 - 960 - 1040 - 1120 - 1200 - 1280 - 1360 - 1440 - 1520 - 1600 - 1680 - 1760 - 1840 - 1920 - <b>2000</b> - 2080 - 2160 - 2240 - 2320 - 2400 - 2480 - 2560 - 2640 - 2720 - 2800 - 2880 - 2960 - 3040 - 3120 - 3200 - 3280 - 3360 - 3440 - 3520 - 3600 - 3680 - 3760 - 3840 - 3920 - <b>4000</b>

Special lengths or pitches available upon request, please contact our Technical Department  
Highlighted rail lenghts are available from stock

Tab. 4

Version	Characteristics
BASIC	Cold drawn profile with high depth nittrade hardening "Rollon-Nox", oxidation with micro oil impregnation. Ends are cut to size after treatments and sprayed with protective black paint.

Tab. 5

## > Rollers for FXRG

### Guiding roller R.VG and floating roller R.PG

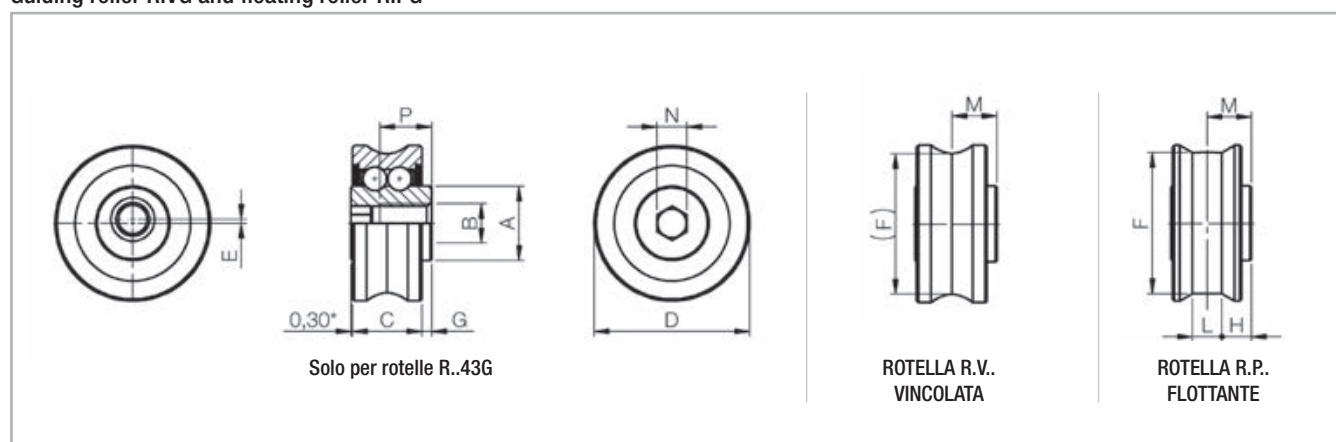


Fig. 16

Roller code	Type	Versions	E [mm]	D [mm]	C [mm]	M [mm]	G [mm]	N chiave	A [mm]	B [mm]	P [mm]	F [mm]	L [mm]	H [mm]	Weight [g]	Dynamic coefficient C [N]	Load capacity	
																	Co <sub>rad</sub> [N]	Co <sub>ax</sub> [N]
RCV43G	Concentric	guiding	-	31,4	14	9	2	6	15	M8	10,5	-	-	-	50	7600	4000	1190
RCP43G		floating	-	31,5								28,59	6	6		7600	4000	0
REV43G	Eccentric	guiding	0,8	31,4	14	9	2	6	15	M8	10,5	-	-	-	50	7600	4000	1190
REP43G		floating		31,5								28,59	6	6		7600	4000	0

Tab. 6

### Self-aligning combinations

When FXRG rails are used in parallel, the use of floating rollers R.P43G and guiding rollers R.V43G provides a Self-aligning system, capable of compensating great inaccuracies of structure or assembly errors. The guiding rollers R.V43G in contact with the FXRG's gothic raceways assure

precise guiding while compensating misalignment, as they are able to rotate slightly around the longitudinal axis of about  $\pm 5^\circ$ . Combined with floating rollers R.P43G on a parallel rail, such system can compensate an axial displacement of  $\pm 1 \text{ mm}$ , in addition to a max. rotation of  $\pm 5^\circ$ .

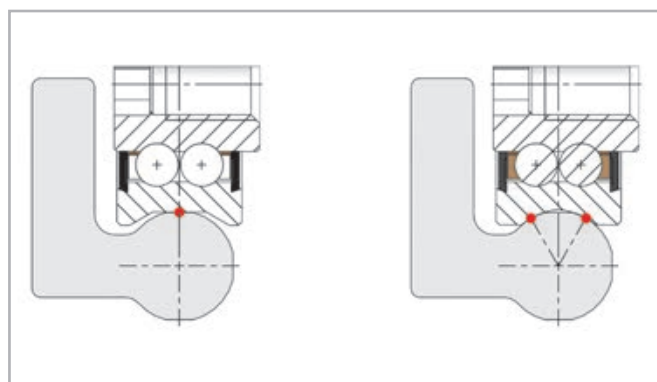


Fig. 17

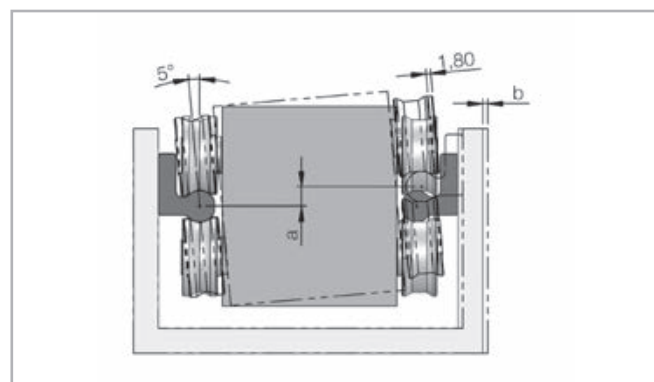


Fig. 18



## > Mounting configurations

The concentric rollers should be positioned in the direction of radial loading. Warning! A single slider configuration will rotate  $\pm 5^\circ$  around the longitudinal axis of a single FXRG rail, not able to take any  $M_x$  moments.

### Single rail with 3 rollers slider

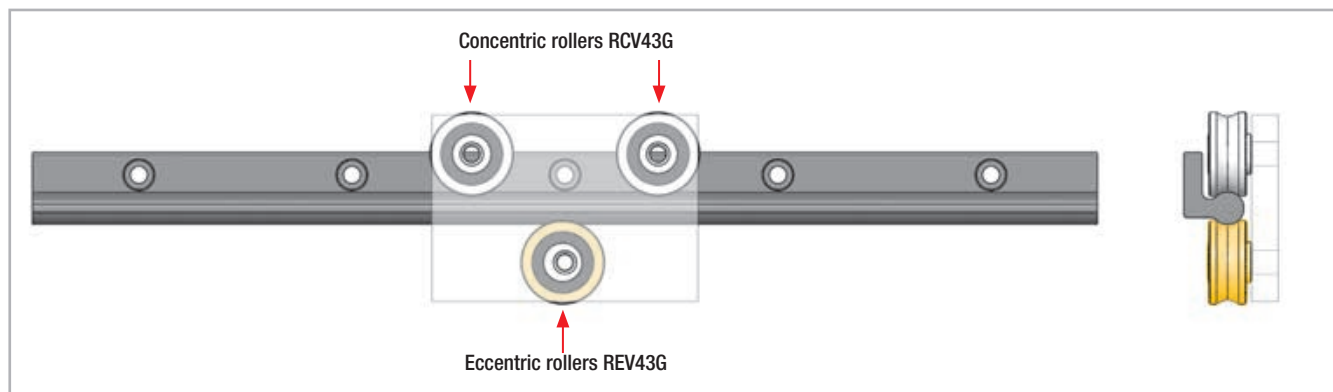


Fig. 19

It is recommended, when more than two rollers are on the same track with max. radial load, to use only two concentric rollers (as from example figure). The others should be eccentric. For cases with a wider distance between concentric rollers, please contact ROLLON's Technical department for dimensioning.

### Single rail with 5 rollers slider

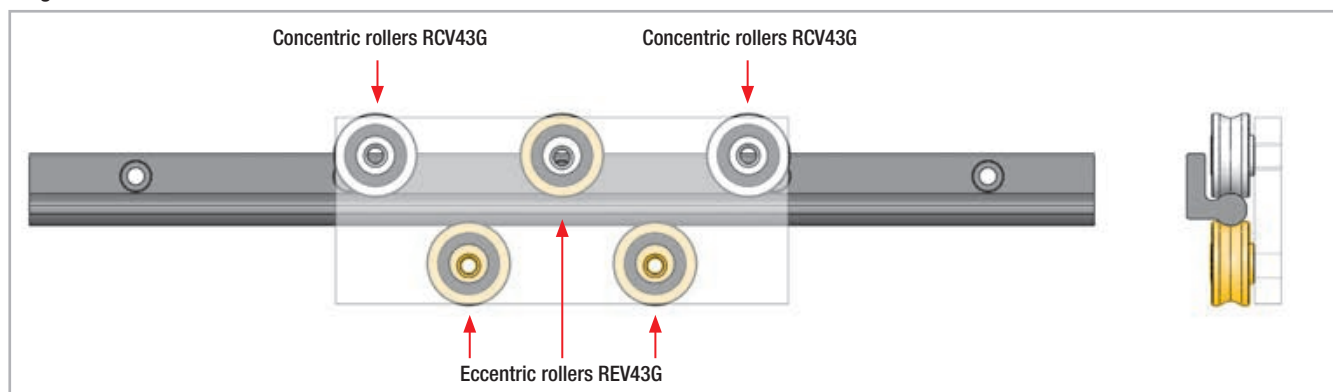


Fig. 20

### Double rail with slider for high overturning moments

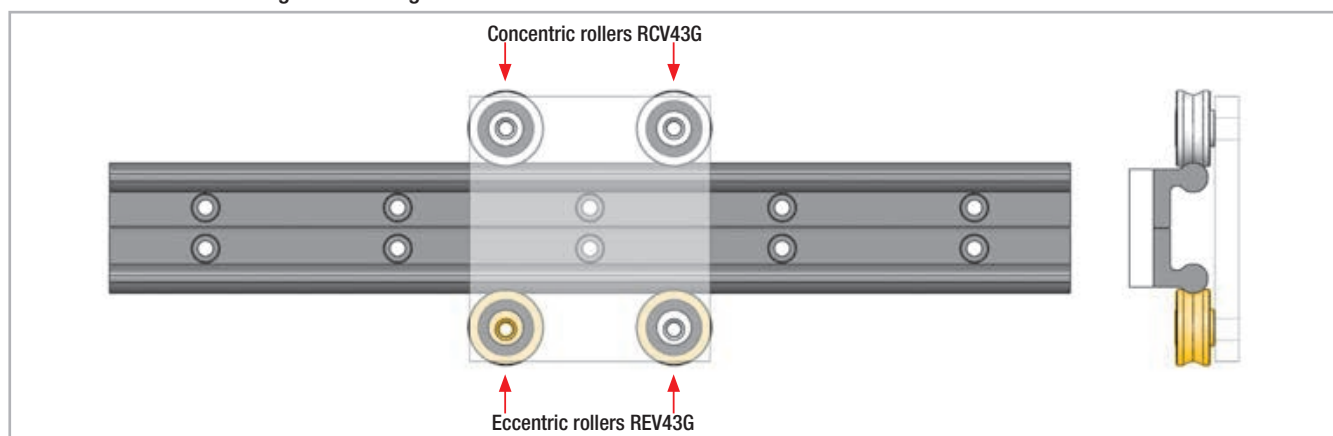


Fig. 21

The rollers need to be positioned on the rail in numbers and directions according to the prevailing load. It is always preferable to orient the rollers so that the prevailing load acts radially, due to higher radial load capacity.

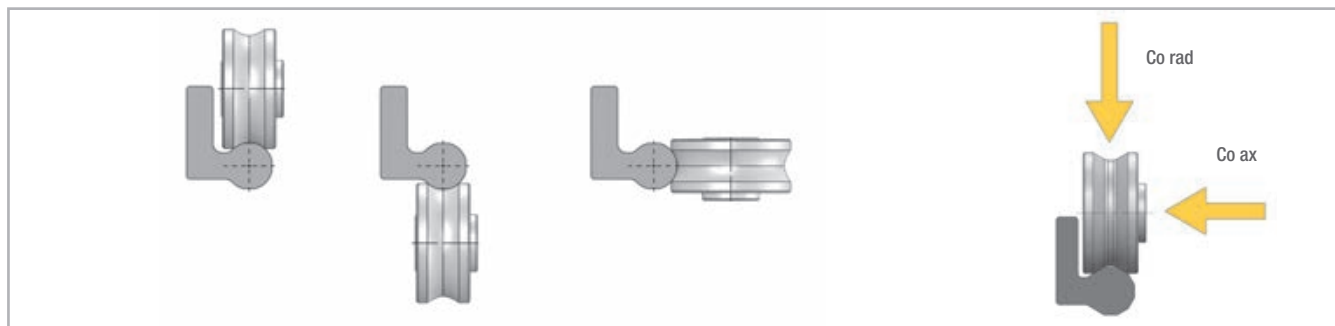


Fig.22

The rollers must be fixed on a metal surface not yielding, perfectly flat and with its fixing screws, applying a locking torque of 22 Nm.

The tightening of the fixing-screw is to be performed, while holding the roller firm with an Allen-wrench, present on the opposite side of the fixing thread. In case eccentric rollers, it is advisable to use a cup-spring washer under the screw-head to obtain a firm movement, able to maintain the roller "firm" against the surface and facilitate minor

adjustment of eccentric roller, before the final locking. The preload adjustment can also be carried out by checking the force  $F_i$  of insertion of the movable part, in which the rollers are fixed into the rail. In general for a good  $F_i$  adjustment, the inserting friction must be between 2-10 N. To increase or decrease the  $F_i$  act on eccentric rollers, opposite to the load direction (see figure below).

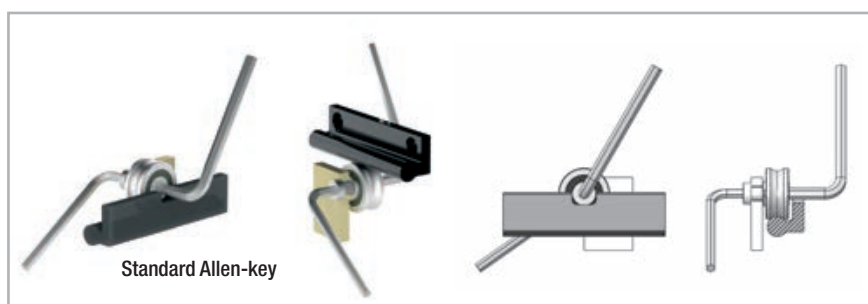
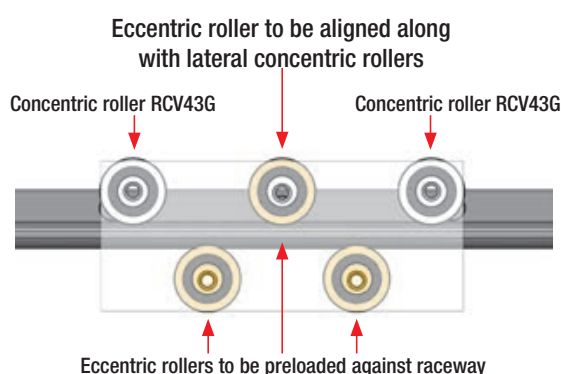


Fig. 23

In case required to have eccentric rollers on the internal rail side, it is necessary to include optional accesses, to allow Allen-key to reach the roller. Otherwise the adjustment can take place outside of the rail.

#### Possible configurations

Fig. 24  
OR-9

Ordering key

✓

> O-Rail guide

FXRG	0960	
	Length	see pg. OR-6ff
Product type	see pg. OR-2ff	

Ordering example: FXRG-3120

Notes on ordering: Rail lengths and stroke lengths are always stated with 4 digits. Please pad with zeroes to fill in for lengths with less than 4 digits, e.g. 515mm length is "0515"



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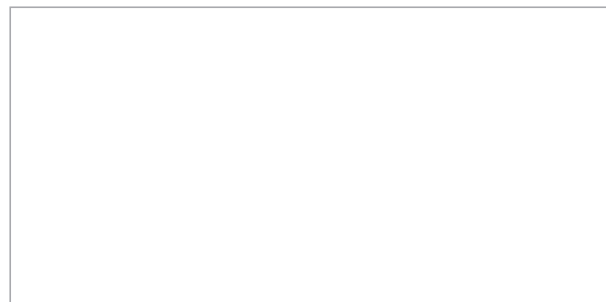
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