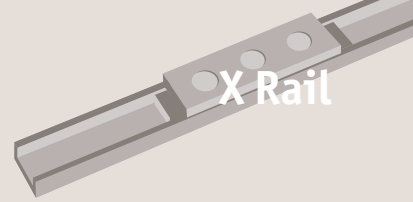




# X Rails

## Introduction



LONG LINEAR RAILS

The X rail system is a highly cost-effective product made of zinc plated steel (L1970), the stainless steel version (L1971) has a high level of corrosion resistance.

### Cost-effective and corrosion resistant

The X rail is relatively inexpensive as it is based on a rolled formed, steel section.

It allows for adjustments due to misalignment of the structure that it is being used on and with internal raceways is suited for robust use but is not suitable for applications having significant moment loads.

The stainless steel (316L) version uses FDA and USDA compliant materials.

### Zinc-plated version

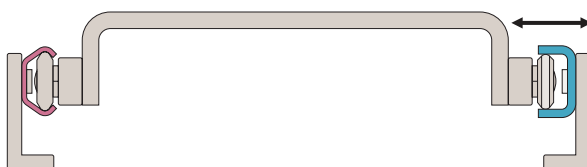
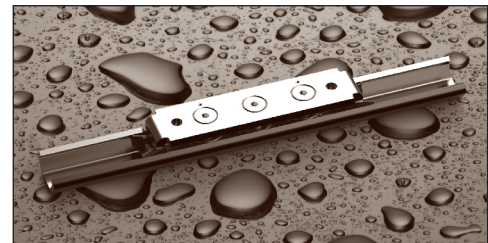
3 sizes to allow the most cost-effective solution for light and heavy duty applications.

### Stocked

Same day despatch for lengths of up to 3 metres.

### Stainless steel version

- High grade stainless (316L).
- For wet applications.
- 2RS (splash-proof) seals.



T and U rail allows for misalignment

### Flexibility in set-up

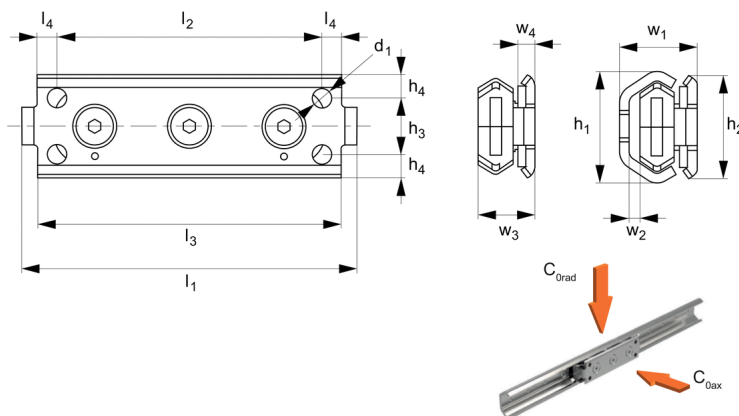
X rail allows the sliders one rail to remain fixed in place but allows some lateral movement of the sliders in the other rail to adapt to any misalignment.



Using two T rails good set-up accuracy is required



### L1970.LP



#### Material

Steel (BS1449-HR1), zinc plated.  
Rollers with metal seals (2Z).

#### Technical Notes

The three sizes of sliders are suited to the relevant L1970.TES rail size.

Select the size and quantity to suit the required load.

#### Tips

The punched dot marked on the slider body indicates the orientation for the loading of the fixed rollers.

The middle roller is eccentric, allowing the preload to be easily adjusted when mounted inside the rail.

Coefficient of friction (without seals) 0.01.

Order No.	Size	$h_1$	$h_2$	$h_3$	$h_4$	$l_1$	$l_2$	Weight kg
L1970.20T-080	20	19.2	18	-	9	80	60	0.05
L1970.30T-088	30	29.5	27	15	6	88	70	0.11
L1970.45T-150	45	46.4	40	23	8.5	150	120	0.40

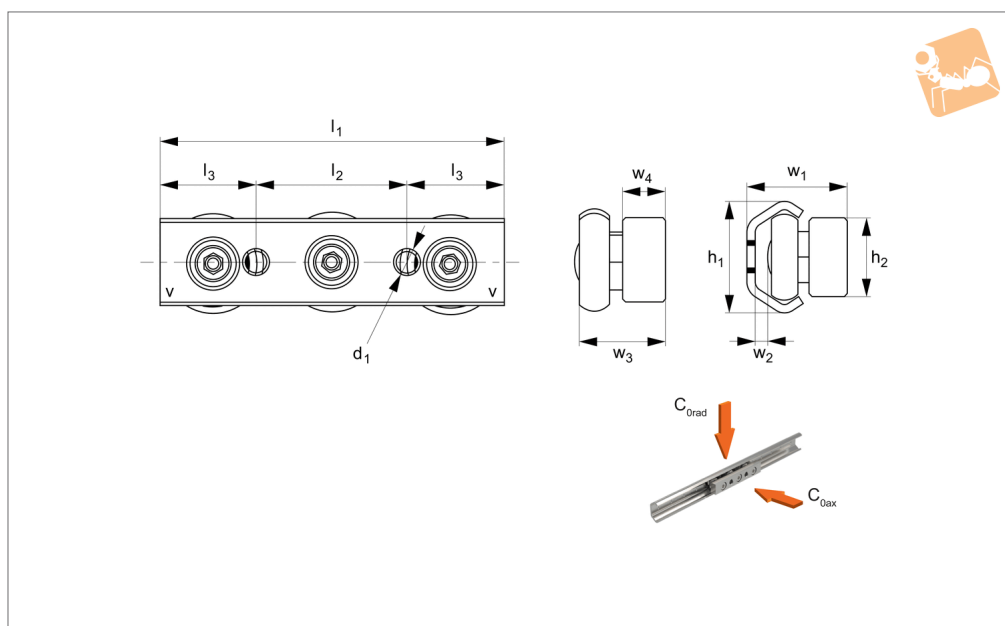
Order No.	$l_3$	$l_4$	$d_1$	$w_1$	$w_2$	$w_3$	$w_4$	Load $C_{0ax}$ N max.	Load $C_{0rad}$ N max.
L1970.20T-080	71	10	M5	16	2.5	11.5	5.5	185	326
L1970.30T-088	80	5	M5	20.5	3.5	15	4.5	435	870
L1970.45T-150	135	7.5	M6	31	5	22	4	935	1740



# Solid Body Steel Sliders for T rail (master)



Long Linear  
Rails



**L1970.SBT**

LONG LINEAR RAILS

## Material

Steel (BS1449-HR1), zinc plated.  
Rollers with metal seals (2Z).

## Technical Notes

The three sizes of sliders are suited to the relevant L1970.TES rail size.

For size 20 sliders there are two threaded holes on the centreline.

Select the size and quantity to suit the required load.

## Tips

The „V“ marks on the slider body indicate

the orientation for the loading of the fixed roller.

The middle roller is eccentric, allowing the preload to be easily adjusted when mounted inside the rail.

Coefficient of friction (without seals) 0.01.

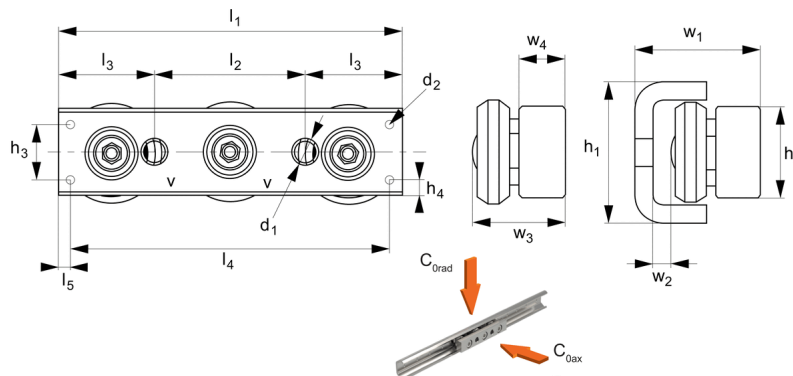
Order No.	Size	$h_1$	$h_2$	$h_3$	$h_4$	$l_1$	$l_2$	Weight kg
L1970.20T-060	20	19.2	10	-	-	60	20	0.04
L1970.26T-080	26	26.1	25	-	12.5	80	30	0.10
L1970.30T-080	30	29.5	20	-	-	80	35	0.17
L1970.40T-135	40	39.5	35	23	6.0	135	-	0.45
L1970.45T-120	45	46.4	25	-	-	120	55	0.47

Order No.	$l_3$	$l_4$	$d_1$	$d_2$	$w_1$	$w_2$	$w_3$	$w_4$	Load $C_{0ax}$ N max.	Load $C_{0rad}$ N max.
L1970.20T-060	20	-	M5	-	17.8	2.6	13	6	185	326
L1970.26T-080	25.0	-	M 5	-	22.00	3.7	15.80	4	400	800
L1970.30T-080	22.5	-	M6	-	26.5	3.3	20.7	10	435	870
L1970.40T-135	7.5	120	-	M 6	28.65	5.0	20.65	6	800	1600
L1970.45T-120	32.5	-	M8	-	38.0	5.1	28.9	12	935	1740



**L1970.SBU**



### Material

Steel (BS1449-HR1), zinc plated.  
Rollers with metal seals (2Z).

### Technical Notes

The three sizes of sliders are suited to the relevant L1970.UES rail size.

Select the size and quantity to suit the required load.

### Tips

The „V“ marks on the slider body indicate the orientation for the loading of the fixed rollers.

The middle roller is eccentric, allowing the preload to be easily adjusted when mounted inside the rail. Coefficient of friction (without seals) 0.01.

### Important Notes

Sliders in U rails cannot accept axial loads.

Order No.	Size	$h_1$	$h_2$	$h_3$	$h_4$	$l_1$	$l_2$	Weight kg	
L1970.30U-080	30	31.8	20	-	-	80	35	0.16	
L1970.40U-135	40	38.5	35	23	8	135	-	0.45	
L1970.45U-120	45	44.8	25	-	-	120	55	0.45	

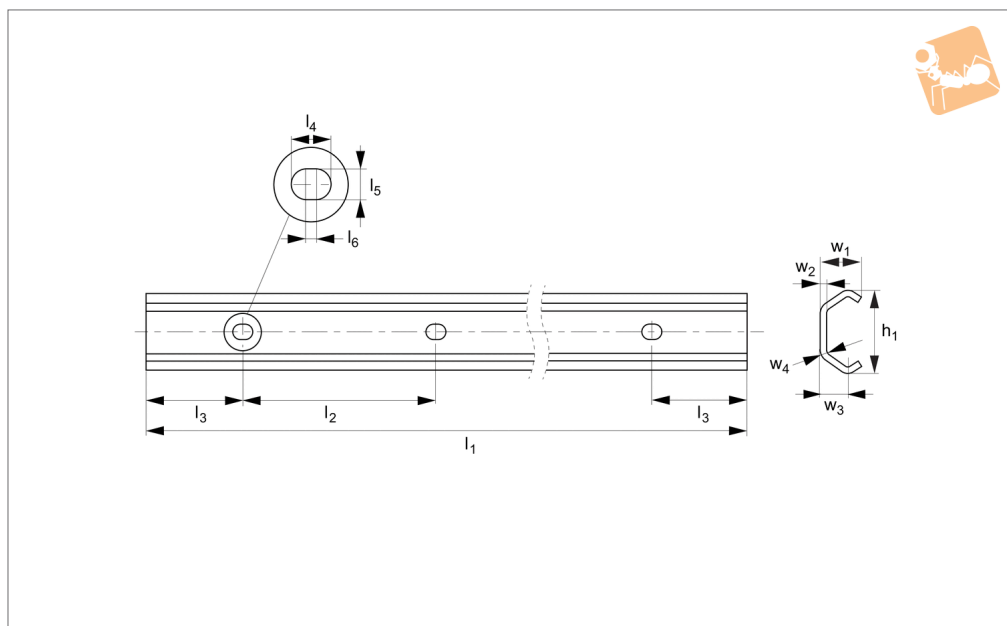
Order No.	$l_3$	$l_4$	$l_5$	$d_1$	$d_2$	$w_1$	$w_2$	$w_3$	$w_4$	Load $C_{0rad}$ N max.
L1970.30U-080	22.5	-	-	M6	-	$27,95 \pm 1,00$	3.5	19.2	10	870
L1970.40U-135	-	120	7.5	-	M 6	$29,95 \pm 1,60$	-	-	6	1600
L1970.45U-120	32.5	-	-	M8	-	$37,25 \pm 1,75$	5	25.5	12	1740



## Steel X Rail T rail (master)



## Long Linear Rails



### L1970.T

LONG LINEAR RAILS

#### Material

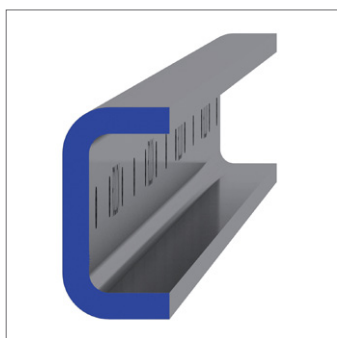
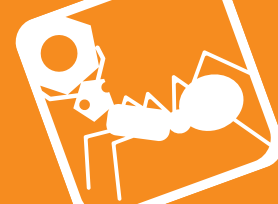
Steel (BS1449-HR1), zinc plated.

7380) or Torx screws (see part no. L1970.S).

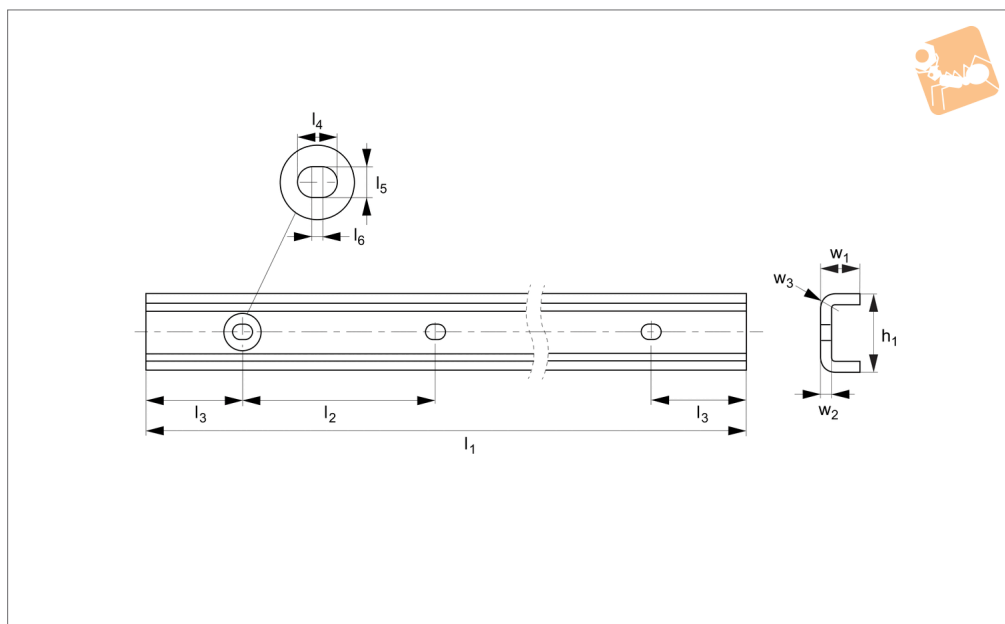
#### Technical Notes

Use hex. socket oval head screws (ISO

Order No.	Rail size	For screw	$h_1$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$w_1$	$w_2$	$w_3$	$w_4$	Weight kg
L1970.20T-1040	20	M 4	19.2	1040	80	40	7	4.5	2.5	10.2	2.0	7.0	3.0	0.47
L1970.20T-2080	20	M 4	19.2	2080	80	40	7	4.5	2.5	10.2	2.0	7.0	3.0	0.94
L1970.20T-3120	20	M 4	19.2	3120	80	40	7	4.5	2.5	10.2	2.0	7.0	3.0	1.41
L1970.26T-1040	26	M 5	26.1	1040	80	40	11	6.0	5.0	14.0	2.5	9.5	4.5	0.80
L1970.26T-2080	26	M 5	26.1	2080	80	40	11	6.0	5.0	14.0	2.5	9.5	4.5	1.60
L1970.26T-3120	26	M 5	26.1	3120	80	40	11	6.0	5.0	14.0	2.5	9.5	4.5	2.40
L1970.30T-1040	30	M 5	29.5	1040	80	40	11	6.0	5.0	14.1	2.5	10.0	4.5	0.90
L1970.30T-2080	30	M 5	29.5	2080	80	40	11	6.0	5.0	14.1	2.5	10.0	4.5	1.80
L1970.30T-3120	30	M 5	29.5	3120	80	40	11	6.0	5.0	14.1	2.5	10.0	4.5	2.70
L1970.40T-1040	40	M 8	39.5	1040	80	40	13	9.0	4.0	20.0	3.0	13.0	6.0	1.55
L1970.40T-2080	40	M 8	39.5	2080	80	40	13	9.0	4.0	20.0	3.0	13.0	6.0	3.10
L1970.40T-3120	40	M 8	39.5	3120	80	40	13	9.0	4.0	20.0	3.0	13.0	6.0	4.65
L1970.45T-1040	45	M 8	46.4	1040	80	40	11	9.0	2.0	24.0	4.0	15.5	6.5	2.29
L1970.45T-2080	45	M 8	46.4	2080	80	40	11	9.0	2.0	24.0	4.0	15.5	6.5	4.58
L1970.45T-3120	45	M 8	46.4	3120	80	40	11	9.0	2.0	24.0	4.0	15.5	6.5	6.84



# L1970.U



#### Material

Steel (BS1449-HR1), zinc plated.

7380) or Torx screws (see part no. L1970.S).

#### Technical Notes

Use hex. socket oval head screws (ISO

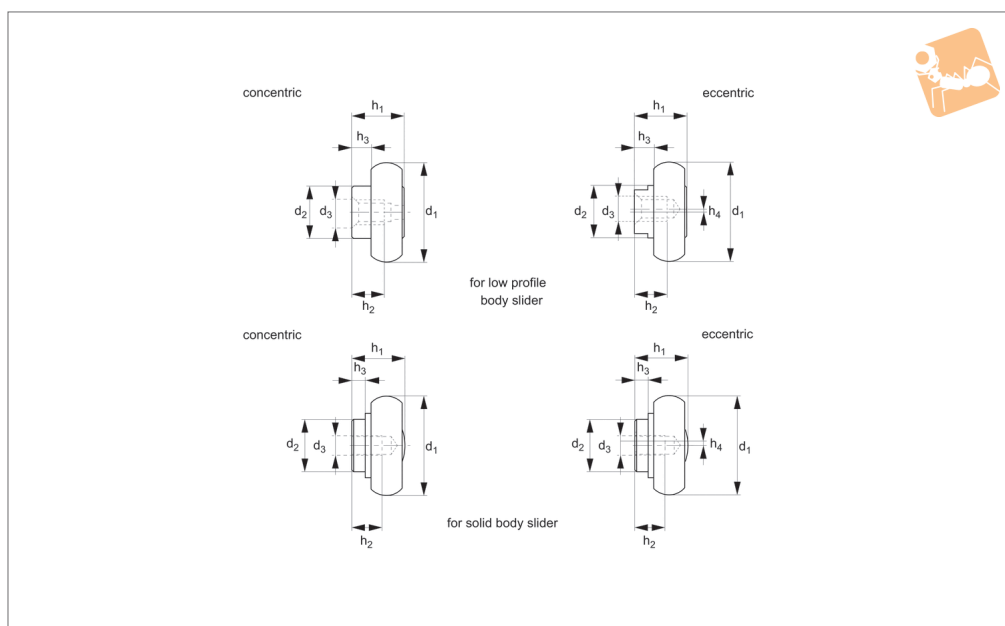
Order No.	Rail size	For screw	$h_1$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	$w_1$	$w_2$	$w_3$	Weight kg
L1970.30U-1040	30	M5	31.8	1040	80	40	8.4	6.4	2	16	4	7	1.4
L1970.30U-2080	30	M5	31.8	2080	80	40	8.4	6.4	2	16	4	7	2.8
L1970.30U-3120	30	M5	31.8	3120	80	40	8.4	6.4	2	16	4	7	4.2
L1970.40U-1040	40	M8	38.5	1040	80	40	13	9	4	21.0	3	6	1.7
L1970.40U-2080	40	M8	38.5	2080	80	40	13	9	4	21.0	3	6	3.4
L1970.40U-3120	40	M8	38.5	3120	80	40	13	9	4	21.0	3	6	5.1
L1970.45U-1040	45	M8	44.8	1040	80	40	11	9	2	24.5	4.5	9.5	2.9
L1970.45U-2080	45	M8	44.8	2080	80	40	11	9	2	24.5	4.5	9.5	5.8
L1970.45U-3120	45	M8	44.8	3120	80	40	11	9	2	24.5	4.5	9.5	8.7



# Steel Replacement Rollers for T version steel X rail



Long Linear  
Rails



**L1970.CRT**

LONG LINEAR RAILS

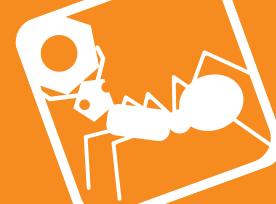
## Material

Rollers with metal seals (2Z).

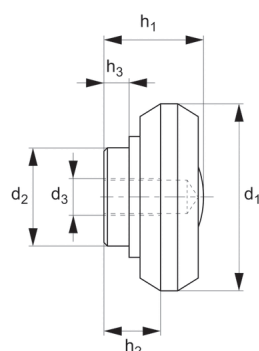
## Technical Notes

For use with X rail steel sliders in T type rail.

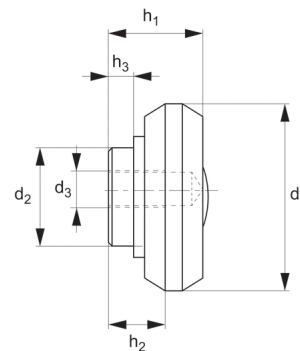
Order No.	For slider type	Type	Body	$h_1$	$h_2$	$h_3$	$h_4$	$d_1$	$d_2$	$d_3$	$w_1$	$w_2$	$w_3$	Weight g
<b>L1970.CRPN20</b>	L1970.20T-080	Concentric	Low prof.	8.2	6.0	4.0	-	14.0	9	M 4	8.5	6.0	4.0	5
<b>L1970.CRPA20</b>	L1970.20T-080	Eccentric	Low prof.	8.2	6.0	4.0	0.5	14.0	9	M 4	8.5	6.0	4.0	5
<b>L1970.CRPN30</b>	L1970.30T-088	Concentric	Low prof.	12.0	8.0	4.5	-	22.8	12	M 5	12.0	7.0	4.5	20
<b>L1970.CRPA30</b>	L1970.30T-088	Eccentric	Low prof.	12.0	8.0	4.5	0.6	22.8	12	M 5	12.0	7.0	4.5	20
<b>L1970.CRPN45</b>	L1970.45T-150	Concentric	Low prof.	17.3	11.5	6.0	-	35.6	17	M 6	18.0	12.0	6.0	68
<b>L1970.CRPA45</b>	L1970.45T-150	Eccentric	Low prof.	17.3	11.5	6.0	0.8	35.6	17	M 6	18.0	12.0	6.0	68
<b>L1970.CRN20</b>	L1970.20T-060	Concentric	Solid	8.7	6.7	6.0	-	14.0	6	M 4	8.7	6.0	1.8	5
<b>L1970.CRA20</b>	L1970.20T-060	Eccentric	Solid	8.7	6.7	6.0	0.5	14.0	6	M 4	8.7	6.0	1.8	5
<b>L1970.CRN30</b>	L1970.30T-080	Concentric	Solid	13.8	10.3	9.0	-	22.8	10	M 5	14.0	9.0	3.8	20
<b>L1970.CRA30</b>	L1970.30T-080	Eccentric	Solid	13.8	10.3	9.0	0.6	22.8	10	M 5	14.0	9.0	3.8	20
<b>L1970.CRN45</b>	L1970.45T-120	Concentric	Solid	20.5	15.0	14.5	-	35.6	12	M 6	20.5	14.5	4.5	68
<b>L1970.CRA45</b>	L1970.45T-120	Eccentric	Solid	20.5	15.0	14.5	0.8	35.6	12	M 6	20.5	14.5	4.5	68



**L1970.CRU**



concentric rollers



eccentric rollers

### Material

Rollers with metal seals (2Z).

### Technical Notes

For use with X rail steel sliders in U type rail.

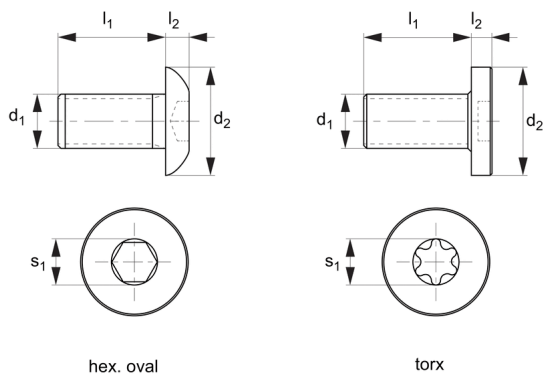
Order No.	For slider type	Type	Body	$h_1$	$h_2$	$h_3$	$d_1$	$d_2$	$d_3$	Weight g
L1970.CPN20	L1970.20U-060	Concentric	Solid	7.35	5.5	1.8	14.0	6	M 4	4
L1970.CPA20	L1970.20U-060	Eccentric	Solid	7.35	5.5	1.8	14.0	6	M 4	4
L1970.CPN30	L1970.30U-080	Concentric	Solid	13.00	7.0	3.5	23.2	10	M 5	18
L1970.CPA30	L1970.30U-080	Eccentric	Solid	13.00	7.0	3.5	23.2	10	M 5	18
L1970.CPN45	L1970.45U-120	Concentric	Solid	18.00	12.0	4.5	35.0	12	M 6	60
L1970.CPA45	L1970.45U-120	Eccentric	Solid	18.00	12.0	4.5	35.0	12	M 6	60





## Fixing screws for steel X rail

Long Linear  
Rails



**L1970.S**

LONG LINEAR RAILS

### Material

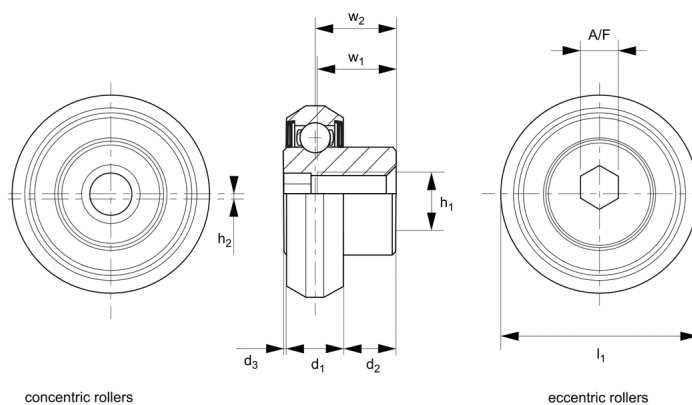
ISO 7380 hex. socket oval head and Torx screws (both zinc plated).

Strength class 10,9.

Order No.	Type	$l_1$	$l_2$	$s_1$	Torque to Nm	$d_1 \times p$	$d_2$
L1970.T20	Torx	8	2	T20	3	M4 x 0,7	8
L1970.T30	Torx	10	2	T25	9	M5 x 0,8	10
L1970.T45	Torx	16	3	T40	22	M8 x 1,25	16



**L1970.CR2640**



### Material

Steel rollers with metal seals (2z).

rails.

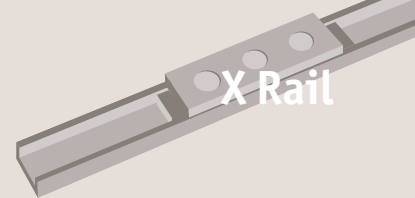
### Tips

\* if used in U-rails.

### Technical Notes

For use with X-rail steel sliders in T type

Order No.	For slider type	Type	Body	$h_1$	$h_2$	$l_1$	$d_1$	$d_2$	$d_3$	$w_1$	$w_2$	A/F	Load $C_0$ rad N	Weight kg
<b>L1970.RLN26</b>	L1970.26T-080	Concentric	Solid	M 5	-	20.2	6	5.50	0.3	8.20	8.5	4	560	0.013
<b>L1970.RLA26</b>	L1970.26T-080	Eccentric	Solid	M 5	0.6	20.2	6	5.50	0.3	8.20	8.5	4	560	0.013
<b>L1970.RLN40</b>	L1970.40T-135	Concentric	Solid	M 6	-	31.5	10	4.65	-	9.65	10.0	5	1200	0.048
<b>L1970.RLA40</b>	L1970.40T-135	Eccentric	Solid	M 6	0.7	31.5	10	4.65	-	9.65	10.0	5	(950*)	0.048



### Specifications

- Maximum speed 1,5 m/s.
- Maximum acceleration 2 m/s<sup>2</sup>.
- Maximum rail length 3120 mm.
- Three rail sizes 20, 30 and 45.
- Temperature range steel -30°C to +120°C.
- Temperature range stainless -30°C to +100°C.
- Sliders have two fixed rollers and one eccentric roller for adjustment of preload.
- Two slider body types; solid slider version and low profile slider version (T rails only).
- Joining of rails together, if required please discuss with our Technical Department.
- Not suitable for large moment loads (in this case use two or more sliders/rails to reduce moment loads).
- For applications with high moment and/or higher precision loads please use our Compact Rail System.

### Applications



#### Safety guarding

Extending protective systems  
sliding gates  
automatic pick & place



#### Sliding doors & windows

Internal sliding doors  
gates • roof lights  
display cases



#### Medical technology

X-ray equipment  
dental chairs  
bed extensions



#### Food, drink & pharmaceuticals

Food handling conveyors  
pharmaceutical factories  
stainless display equipment



#### Transport (naval)

Sliding hatches  
pull-out storage



#### Transport (rail)

Seat adjustment  
sliding doors  
battery removal units



#### Transport (automotive)

Ambulance sliding systems  
fire fighting vehicles  
sliding panels



#### Transport (military)

Sliding seats  
protective hatches  
stretcher extensions



#### Water & waste

Sliding protective hatches  
wash down applications  
water tank doors



## L1970 Zinc-plated steel version



Zinc-Plated Steel

## Solid body slider

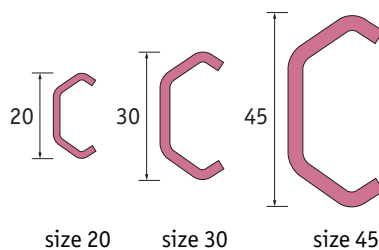
L1970.CEST/U  
(2Z dust proof seals)

## Low profile slider

L1970.CES  
(2Z dust proof seals)

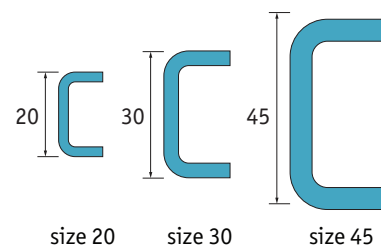
Zinc-Plated Steel

## T Rail (master)



L1970.TES

## U Rail (slave)



L1970.UES

## L1971 Stainless Steel version



Stainless Steel

## Solid body

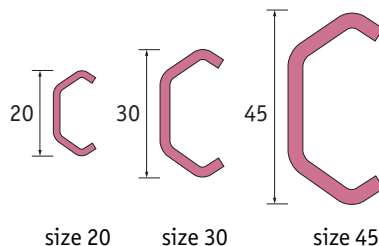
L1971.CEXT/U  
(2RS splash proof seals)

## Low profile slider

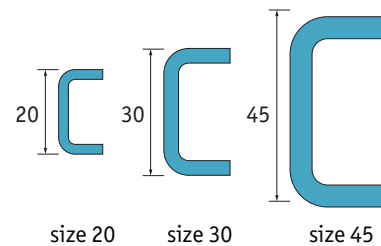
L1971.CEX  
(2RS splash proof seals)

Stainless Steel

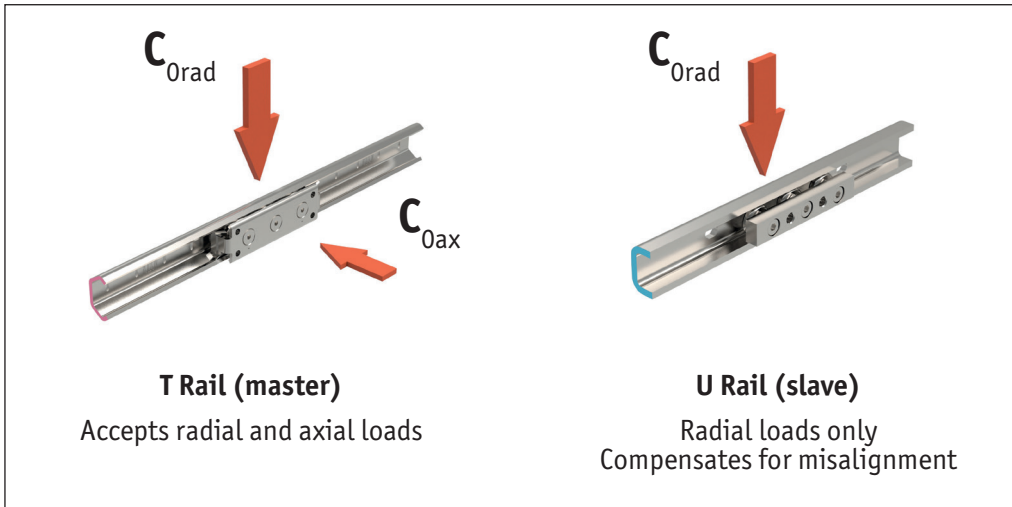
## T Rail (master)



## U Rail (slave)



#### Two rail types



#### Selecting the correct rail

##### Firstly

The decision needs to be made if zinc plated steel or stainless steel rails and sliders are required.

- The zinc plated steel version (L1970) of the product is considerably less expensive than the 316L stainless steel type (L1971).
- The rollers in the zinc plated (L1970) sliders are protected by 2Z metal bearing covers. These are not meant to be used in anything other than a dry environment.
- The L1971 stainless steel X rail system is resistant to water and many chemicals. The slider rollers have rubber 2RS roller seals – being water resistant (not to be used fully submersed).

##### Secondly

The size of system to be used is selected.

- There are three different rail and slider sizes: 20, 30 and 45.
- The load that is being carried and its shape needs to be considered. The X rail system is not really suited for moment loads. If moment loads exist then two or more rails/sliders should be used to offset this. Typically 2, 4 or more sliders are used and the load carried should be divided over the number of sliders bearing in mind that if using a U rail slider along with a T rail, the U rail sliders do not have any axial load capacity.
- The rails are supplied in standard lengths of 1040mm, 2080mm and 3120mm – and can easily be cut to other required lengths by Automotion (on request).

##### Finally

Decide whether a low profile slider or a solid body slider is required (low profile sliders are only available for T rails). The low profile (L1970.CES and L1971.CEX) sliders are less expensive than the solid body sliders.

##### Please note

It is very important to ensure that the correct low profile fixing screws are used with this rail (see part no. L1970.S for zinc plated steel and L1971.S for stainless steel). Using other higher profile heads may lead to contact between the underside of the slider and the top of the screws.



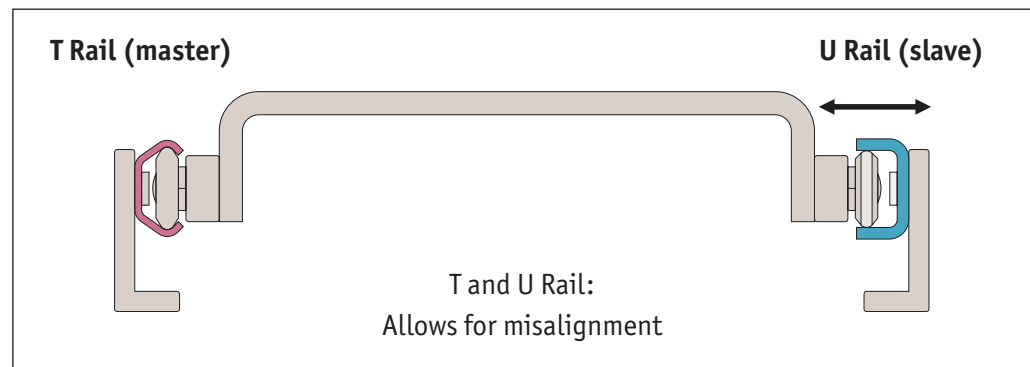
### T rails (master) and U rails (slave)

It is often the case, with the X rail system, that two T rails are used in the system design. However, where there are substantial alignment issues it is better to use a T rail (master) and U rail (slave) as below.

This allows the slider in the T rail to remain fixed in the place, but allows some lateral movement of the sliders in the U rail to adapt to any misalignment and avoid any issues of stiction.

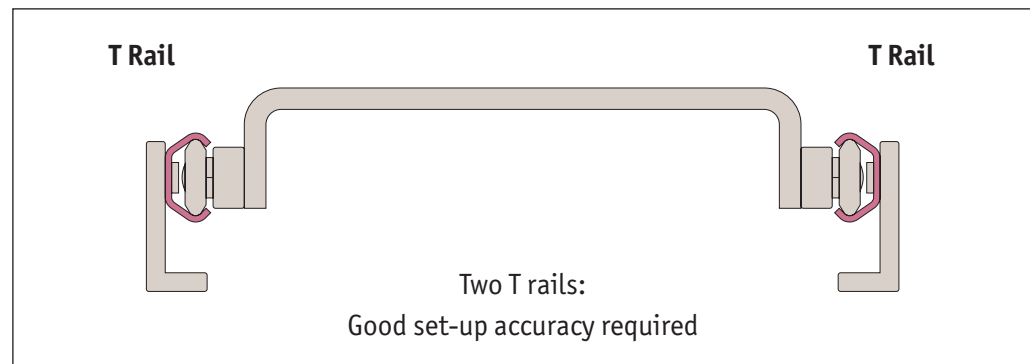
U rails have flat parallel raceways that allow free lateral movement of the sliders. The maximum lateral movement for each size rail is shown in the table that follows.

### T and U rails



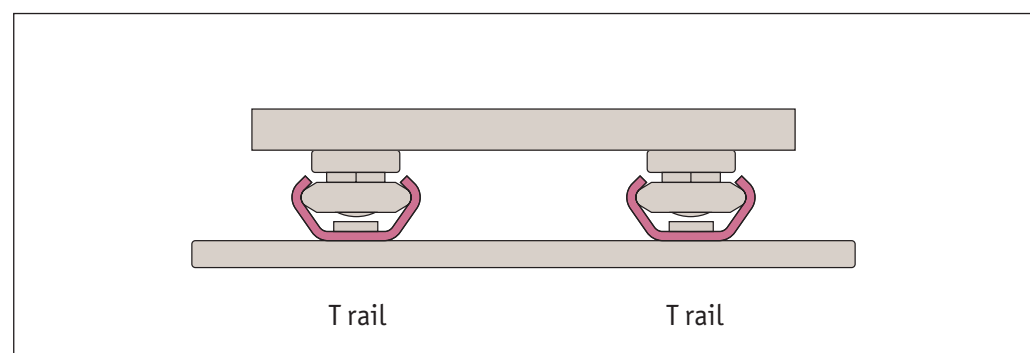
### T and T rails

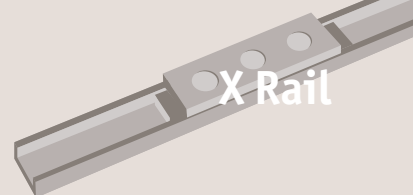
Some customers prefer to use two T rails as shown below. Whilst this is acceptable, a greater degree of accuracy is required in the structure on which the system is used.



It is however also acceptable (but not the preferred method), to use the rails as below but the alignment accuracy needed is slightly greater and in this set up only T type rails can be used. In this instance we recommend the use of solid body sliders L1970.CEST (steel) or L1971.CEXT (stainless) rather than the low profile sliders.

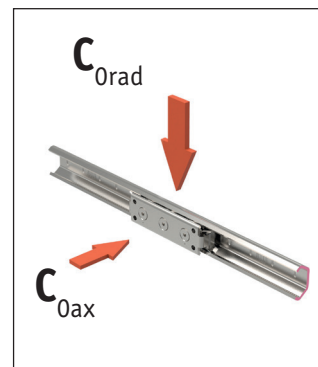
Ensure a significant margin of safety is applied to the load ratings or consider using our hardened steel Compact Rail System.





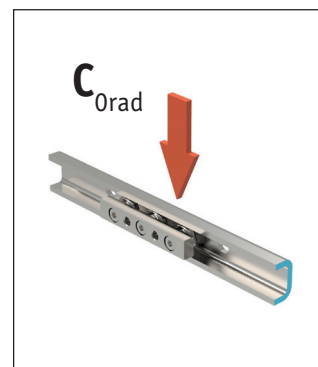
#### L1970 and L1971 slider load ratings for T rails

Part no.	Material	Body	$C_{0rad}$ N	$C_{0ax}$ N
L1970.20T-060	Steel	Solid	326	185
L1970.30T-080	Steel	Solid	870	435
L1970.45T-120	Steel	Solid	1740	935
L1970.20T-080	Steel	Low Profile	326	185
L1970.30T-088	Steel	Low Profile	870	435
L1970.45T-150	Steel	Low Profile	1740	935
L1971.20T-060	Stainless Steel	Solid	300	170
L1971.30T-080	Stainless Steel	Solid	800	400
L1971.45T-120	Stainless Steel	Solid	1600	860
L1971.20T-080	Stainless Steel	Low Profile	300	170
L1971.30T-088	Stainless Steel	Low Profile	800	400
L1971.45T-160	Stainless Steel	Low Profile	1600	860



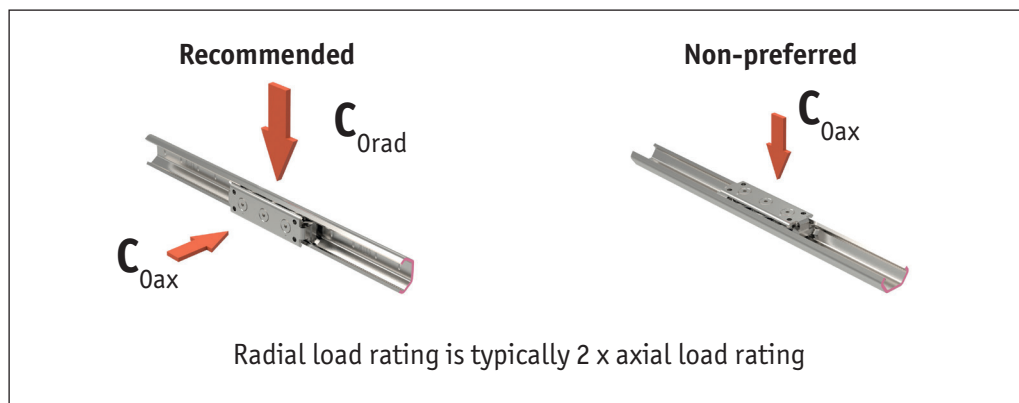
#### L1970 and L1971 slider load ratings for U rails

Part no.	Material	Body	$C_{0rad}$ N	$C_{0ax}$ N
L1970.20U-060	Steel	Solid	326	-
L1970.30U-080	Steel	Solid	870	-
L1970.45U-120	Steel	Solid	1740	-
L1971.20U-060	Stainless Steel	Solid	300	-
L1971.30U-080	Stainless Steel	Solid	800	-
L1971.45U-120	Stainless Steel	Solid	1600	-



#### Orientation of rails

The radial load that the sliders can take is significantly higher than the axial load, so where possible the rails should be set up with the sliders taking the loads in this plane.



U rail sliders cannot accept axial loads



### Why should I consider using the X Rail system?

The X rail system is very cost-effective.

Using a master (T rail) and slave rail (U rail), the structure onto which the rail is installed does not have to be machined as accurately as when using other rail systems - this can result in major cost savings for many projects.

It is highly resistant to dirt. The L1971 stainless steel X rail is very corrosion resistant and can be used in wet environments (not submerged).

### Are there any disadvantages?

The X rail system is made of a rolled formed section. It is not suited to high moment loads. If moment loads are present then typically more sliders and/or an extra rail is used to provide a system where less moment loads are applied to the sliders.

If you have applications with significant moment loads we would recommend the use of our Compact Rail System which is made from cold drawn steel section and has hardened raceways.

### How do I change the smoothness of the running of the sliders in the rails?

Each slider is supplied with a small spanner. This can be used to push the eccentric roller towards the top of the rail (making it run more stiffly), or pulled away slightly to make the sliders run very smoothly. The eccentric rollers are clearly marked and the slider should be installed the correct way up in the rail. Generally this is with the fixed rollers towards the bottom of the rail (providing the loading points). The simple instructions are shown in the catalogue.

### I want to use the rail outside or in a slightly wet environment?

The stainless steel version (L1971) is made of highly corrosion resistant 316L stainless steel. The rollers are also stainless steel but harder (440C stainless) and are fitted with 2RS rubber seals (splash proof). They can be used outside and in marine applications (e.g. sliding doors and hatches).

### Do you hold these parts in stock?

Yes.

### Can I get CAD files of these parts?

Most of the 3D models (in many formats) are available for download directly from our website [www.automationcomponents.co.uk](http://www.automationcomponents.co.uk)

## CAD - Download in 3 easy steps

Most of our products are available to download directly from our website. Get the CAD you need for your application in minutes, no registration required.

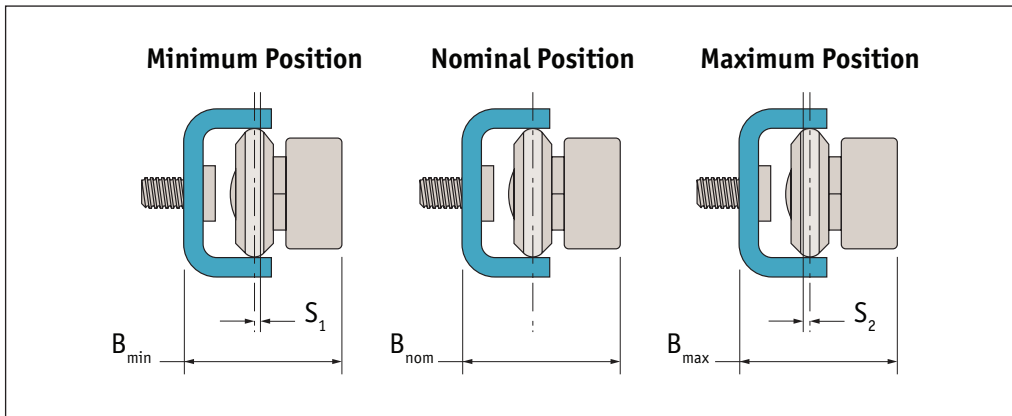
<b>Step 1: Find the part you need</b> Find the part or enter the Automation part number into the search bar.																			
<b>Step 2: Choose the CAD option</b> Click on the CAD button below the product window to the right of the drawing.																			
<b>Step 3: Download your format</b> Choose the the format you require, and download it to your computer.	<table border="1"> <tr> <td>L1016.CL ACIS</td> <td>865.93 KB</td> <td></td> </tr> <tr> <td>L1016.CL IGES</td> <td>1.19 MB</td> <td></td> </tr> <tr> <td>L1016.CL Parasolid</td> <td>352.62 KB</td> <td></td> </tr> <tr> <td>L1016.CL PPT</td> <td>2.89 MB</td> <td></td> </tr> <tr> <td>L1016.CL SolidWorks</td> <td>1.66 MB</td> <td></td> </tr> <tr> <td>L1016.CL Step</td> <td>718.85 KB</td> <td></td> </tr> </table>	L1016.CL ACIS	865.93 KB		L1016.CL IGES	1.19 MB		L1016.CL Parasolid	352.62 KB		L1016.CL PPT	2.89 MB		L1016.CL SolidWorks	1.66 MB		L1016.CL Step	718.85 KB	
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### Slave rail compensation

In a T+U-System, the slider in the T rail carries axial and radial loads and guides the movement of the slider in the U rail. U rails have flat parallel raceways that allow free lateral movement for the sliders. The maximum freedom a slider in the U rail can offer can be calculated using the values  $S_1$  and  $S_2$ . With nominal value  $B_{nom}$  as the starting point,  $S_1$  indicates the maximum allowed movement into the rail, while  $S_2$  represents the maximum offset towards the outside of the rail.

If the length of the rail is known, the maximum allowable angle of deviation of the mounting surface is shown below. In this case the slide in the U rail has the freedom to travel from the innermost position  $S_1$  to the outermost position  $S_2$ .

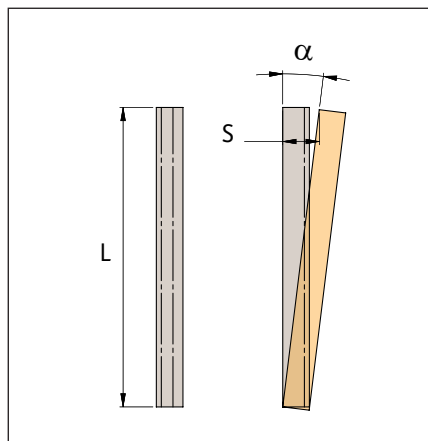


U rail size	$S_1$	$S_2$	$B_{min}$	$B_{nom}$	$B_{max}$
20	0,60	0,60	17,65	18,25	18,85
30	1,00	1,00	26,95	27,95	28,95
45	1,75	1,75	35,50	37,25	39,00

Guideline for maximum angle deviation  $\alpha$ , achievable with the longest guide rail

$$\alpha = \arctan \frac{S^*}{L}$$

$S^*$  = sum of  $S_1$  and  $S_2$   
 $L$  = length of the rail



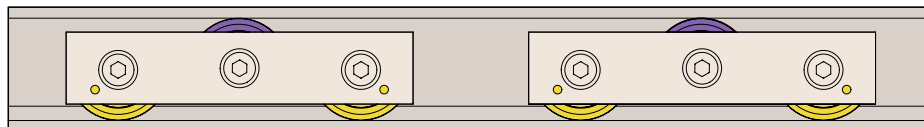
Size	Rail length	Offset $S^*$	Angle $\alpha$ °
20	3120	1,2	0,022
30	3120	2,0	0,037
45	3120	3,5	0,064

X Rail from Automation Components



The standard arrangement of the sliders (when used in a horizontal application) is as follows:

#### Arrangement 1



Note orientation of fixed rollers



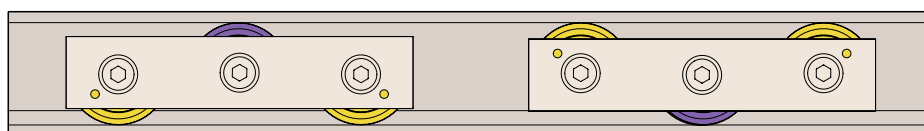
Fixed Roller



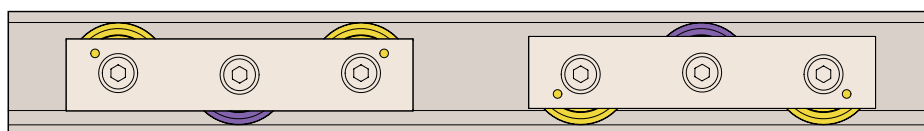
Eccentric Roller

For other applications (e.g. horizontal or vertical) the alternative arrangements are as follows:

#### Arrangement 2



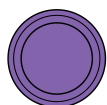
#### Arrangement 3



Note orientation of fixed rollers



Fixed Roller

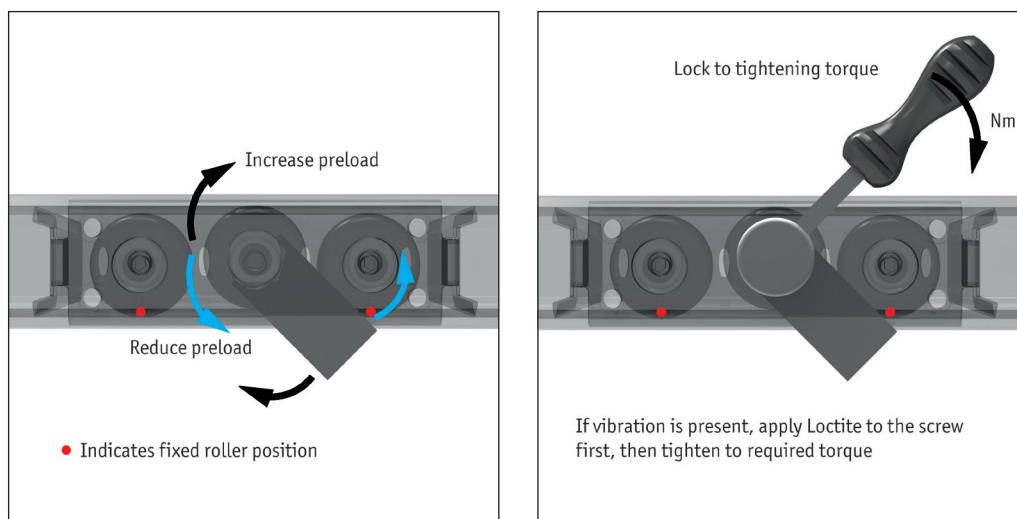


Eccentric Roller

### Adjusting the sliders

If delivered separately, or if the sliders need to be installed in another rail, the sliders must be re-adjusted. In this case, follow the instructions below.

The “•” or “V” marked on the slider indicates the direction of the fixed rollers.



The sliders have three large rollers. The two at either end are fixed and the direction of these fixed positions is marked on the sliders with a dot or an arrow.

Insert the sliders into the rails with the fixed rollers set to take the load in the best direction.

The middle roller is on an eccentric pivot that is easily adjusted (using the thin spanner that is supplied with them and a hexagon key). This allows the preload of the system to be set as required – stiff or free running.

Generally the sliders will not be inserted into the rails when leaving the factory. To set the sliders to the required preload is a simple procedure:

- Ensure raceways are clean.
- Remove the small plastic wipers (from the low profile sliders) and insert the slider into the rail.
- Slightly loosen the centre roller (using the spanner and a hexagon key).
- For U rails a packer should be used to set the slider in its middle lateral position.
- Use the flat spanner provided to move the middle roller on its eccentric to adjust the stiffness of its running. Not too loose so that there is excess play and not too tight that a lot of friction is generated.
- Lock the roller in the desired position with the spanner and a hexagon key.
- Move the slider the length of the rail to check required running – it should move easily with no play at any point on the rail.
- Tighten the fixing screw to the correct torque – whilst holding the spanner in place to ensure no further movement (see correct torque values in table below).
- Finally (if using a slider with a wiper), re-install the wipers if required.

Size	Tightening torque Nm
20	3
30	7
45	12