

ROLLON®
BY TIMKEN

Curviline



Product explanation



> Curviline are curvilinear rails for constant and variable radii



Fig. 1

Curviline is the name of the curvilinear rail product family that is used for all non-linear special movements. Rails with constant or variable radii may be specified according to customer requirements, resulting in a highly flexible, economical solution. Curviline is available in two rail widths.

The use of standard radii is recommended. All non-standard rail layouts and radii are possible as custom products, however extra lead time may result.

Preferred areas of application of the Curviline product family:

- Packaging machines
- Railway car interior doors
- Special extensions
- Shipbuilding (interior doors)
- Food industry

The most important characteristics:

- Straight and curved sections in one continuous rail is possible
- Sliders with four rollers arranged in pairs maintain the preload over the entire rail length
- Custom production according to customer requirements
- Also available in stainless steel

Constant radii

The layout of CKR guide rails corresponds to a partial section of a complete circle.

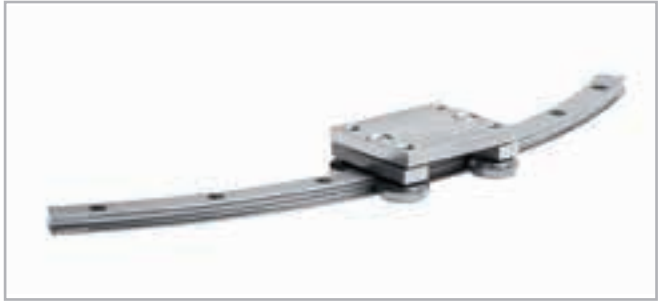


Fig. 2

Variable radii

CVR curvilinear rail is a combination of variable radii and straight sections.



Fig. 3

Straight rail

The linear rail Curviline is also available in its straight version.



Fig. 4

Slider

The carriage maintains the desired preload over the entire rail layout. Pivoting roller mounts coupled with concentric and eccentric rollers allows for a smooth operation over complex rail layouts.



Fig. 5

Technical data

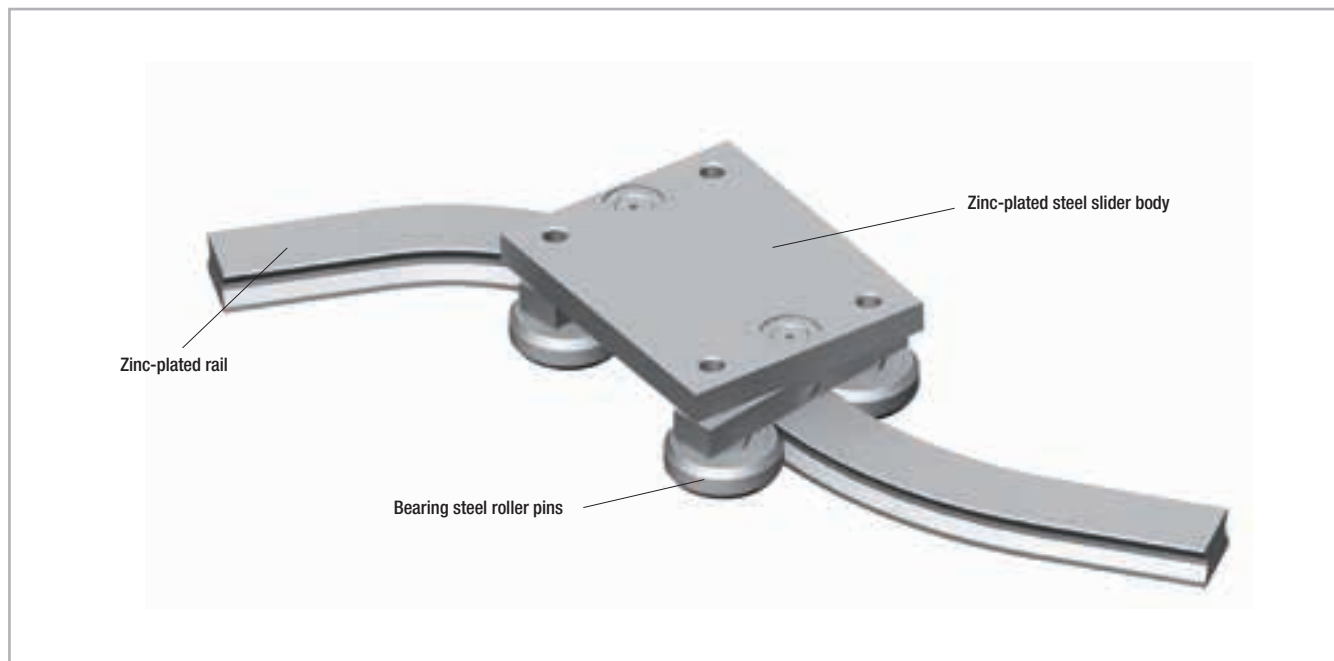


Fig. 6

Performance characteristics:

- Available rail widths: CKR01/CVR01: 16.5 mm (0.65 in) and CKR05/CVR05: 23 mm (0.91 in)
- Max. slider operating speed on the rail: 1.5 m/s (59 in/s) (depending on application)
- Max. acceleration: 2 m/s² (78 in/s²) (depending on application)
- Max. effective length of the rail: 3,240 mm (127.56 in)
- Max. traverse: CCT08: 3,170 mm (124.8 in) and CCT11: 3,140 mm (123.62 in)
- Minimum radius for stainless steel version and non-hardened version 120 mm
- Minimum radius for version with hardened raceways: 300 mm for section 01, 400 mm for size 05
For non-standard radii, please contact Rollon technical support.
- Radius tolerance +/- 0.5 mm (0.02 in), angle tolerance +/- 1°
- Temperature range: -20 °C to +80 °C (-4 °F to +176 °F)
- Rail and runner electrolytic zinc-plated and passivated (Rollon Alloy); increased anticorrosive protection on request (see pg. CL-12 Anticorrosive protection)
- Rail material: C43, AISI316L for the stainless steel version
- Slider body material: Fe360, AISI316L for the stainless steel version
- Radial ball bearing roller material: 100Cr6, AISI440 for the stainless steel version
- Rollers are lubricated for life

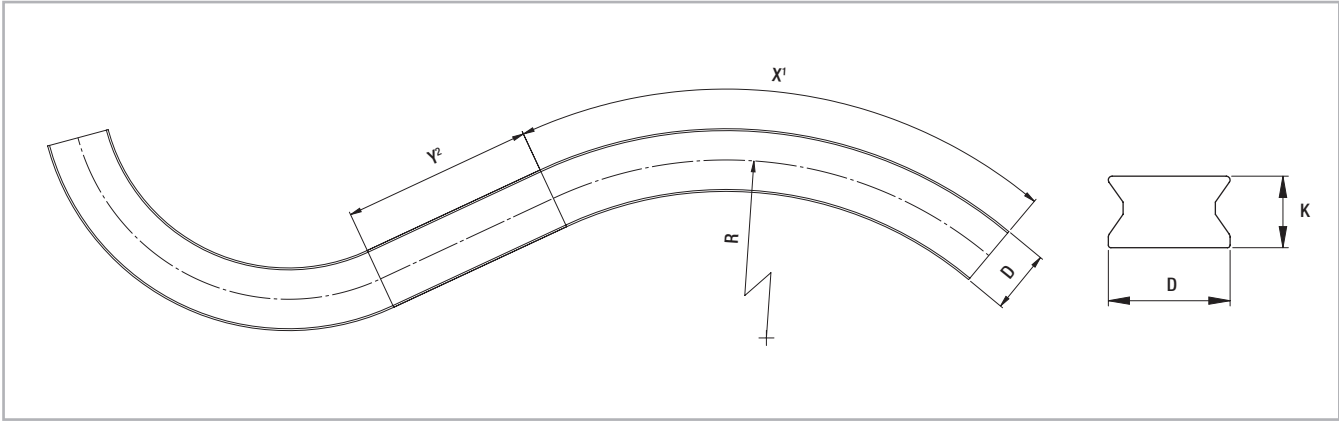
Remarks:

- With a simple adjustment of the eccentric roller (denoted with a marking on the bottom of the roller), the slider preload can be set to desired preload, including clearance.
- The recommended hole pitch is 80 mm (3.15 in) on the extended length
- Please indicate the precise rail layout and the desired hole pattern in a drawing
- Indicate if the design is a right or left version when ordering
- Joined rails are not recommended. For more information, please contact Rollon technical support.
- Resulting moment loads must be absorbed through the use of two sliders. For more information, please contact Rollon technical support.

Product dimensions

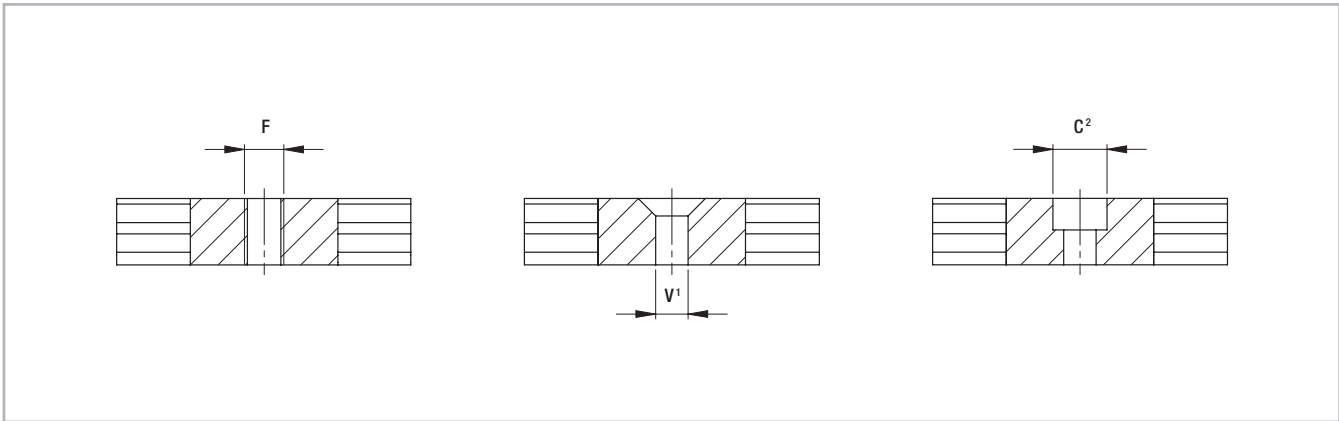
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> Rails with constant/variable radii with tempered raceways



¹ The max. angle (X) is dependent on the radius
² For curvilinear rails with variable radii, Y must be at least 70 mm

Fig. 7



¹ Fixing holes (V) for countersunk head screws according to DIN 7991
² Fixing holes (C) for socket cap screws according to DIN 912

Fig. 8

Type	D [mm]	K [mm]	F	C²	V¹	X	Standard radii [mm]	Y [mm]	Weight [kg/m]
CKRH01 CVRH01	16,5	10	up to M6	up to M5	up to M5	dependent on radius	300* - 400 - 500 - 600 - 700 - 800 - 900 - 1000	min. 70	1,2
CKRH05 CVRH05	23	13,5	up to M8	up to M6	up to M6				2,2

* Only for size 01

Tab. 1

Please indicate the precise rail layout and the desired hole pattern in a drawing. We recommend 80 mm (3.15 in) on the extended length as a gage for the hole pattern.

Non-standard radii are possible as special products. For more information on rail layouts, radii and hole patterns, please contact Rollon Technical Support.

> Slider

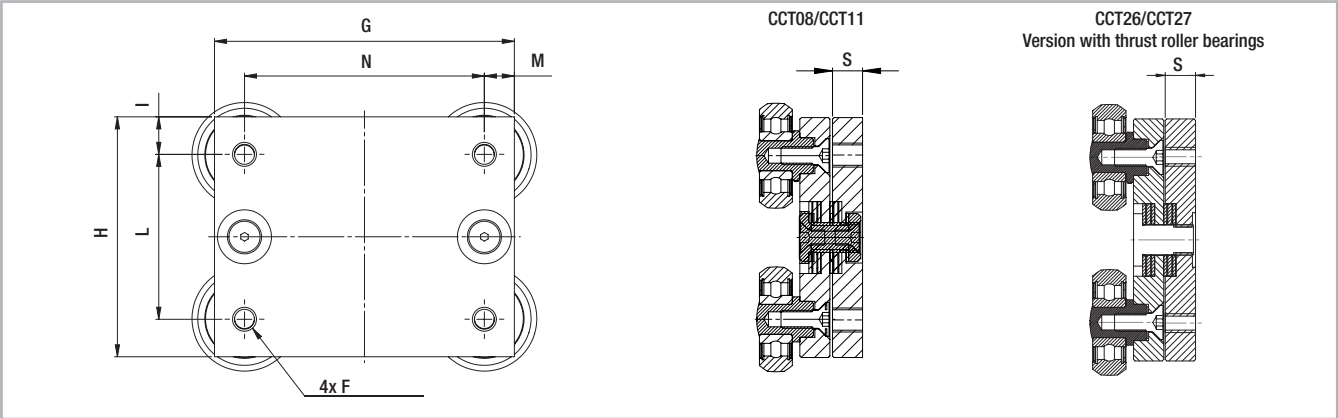


Fig. 9

Type	G [mm]	H [mm]	I [mm]	L [mm]	M [mm]	N [mm]	S [mm]	F	Weight [kg]
CCT08/CCT26	70	50	10	30	10	50	10	M5	0,45
CCT11/CCT27	100	80	12,5	55	10	80	10	M8	1,1

Tab. 2

> Mounted sliders and rails

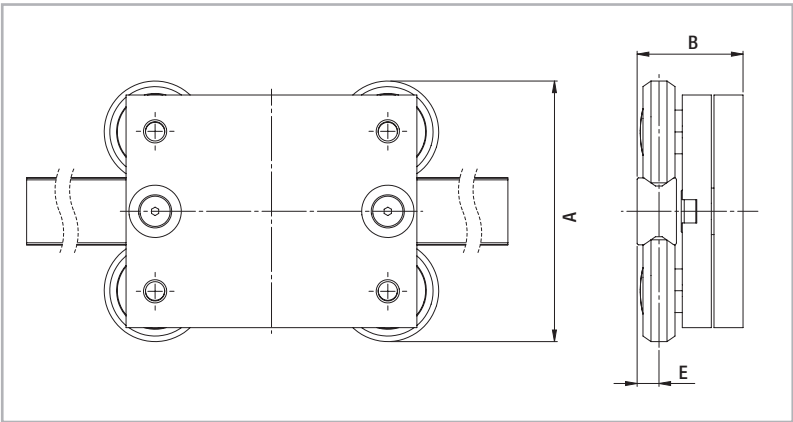


Fig. 10

Configuration	A [mm]	B [mm]	E [mm]
CKRH01-CCT08/CCT26 CVRH01-CCT08/CCT26	60	32,3	5,7
CKRH05-CCT11/CCT27 CVRH05-CCT11/CCT27	89,5	36,4	7,5

Tab. 3

> Load capacities

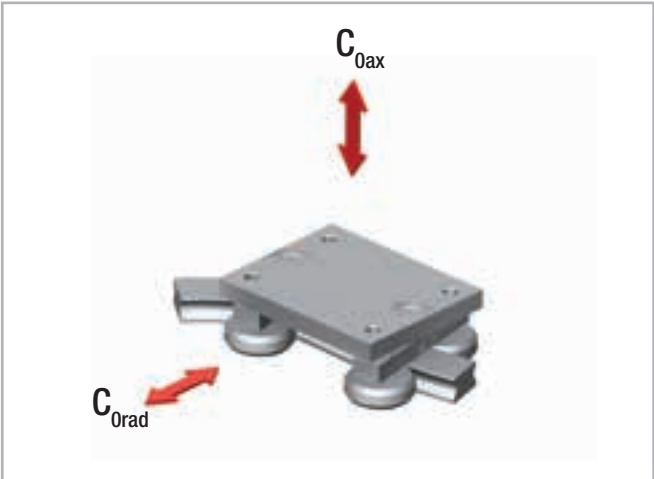


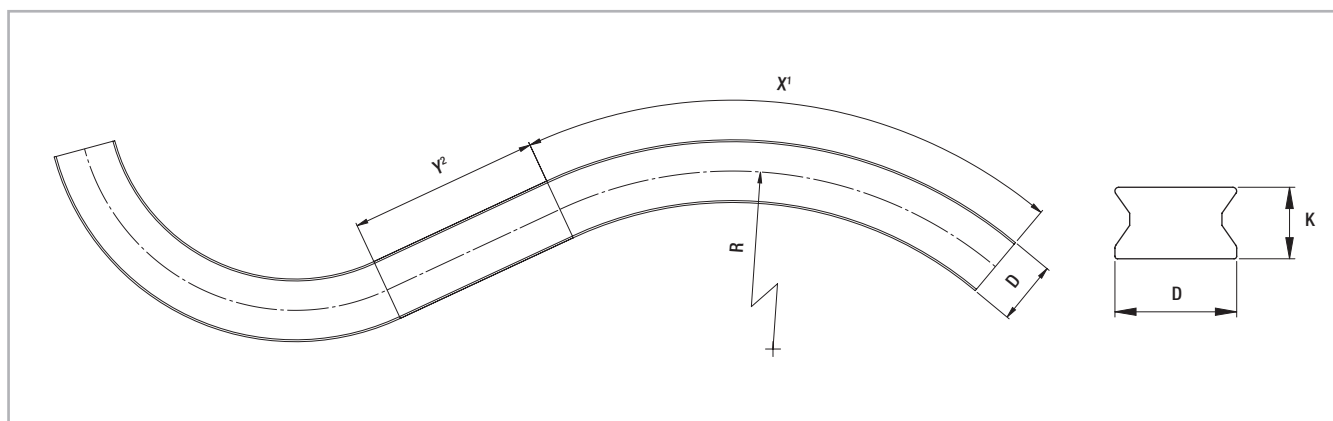
Fig. 11

Slider type	Load capacities	
	C _{0ax} [N]	C _{0rad} [N]
CKRH01-CCT08/CCT26 CVRH01-CCT08/CCT26	592	980
CKRH05-CCT11/CCT27 CVRH05-CCT11/CCT27	1459	2475

Resulting moment loads must be absorbed through the use of two sliders

Tab. 4

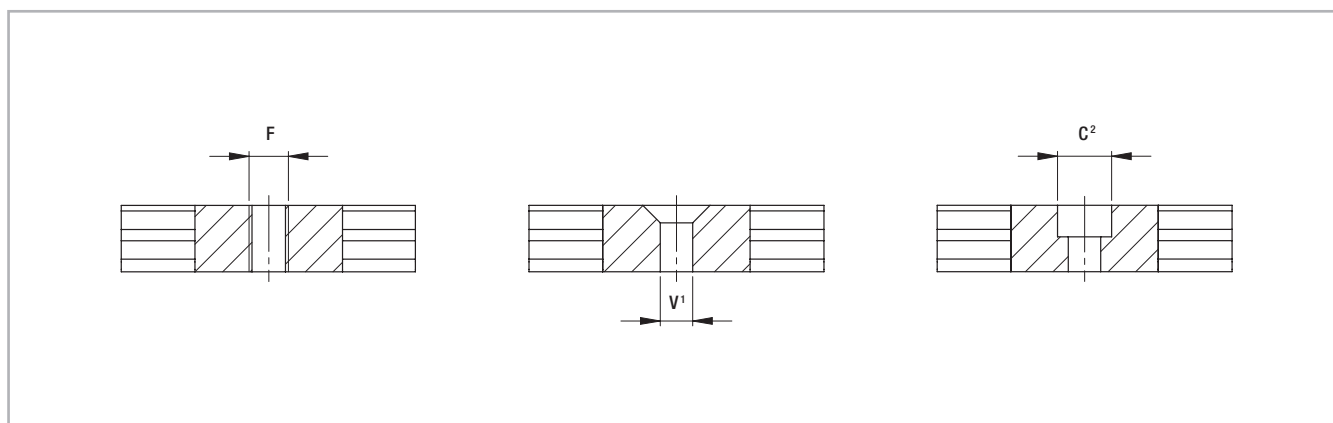
> Rails with constant/variable radii in carbon steel



¹ The max. angle (X) is dependent on the radius

² For curvilinear rails with variable radii, Y must be at least 70 mm

Fig. 12



¹ Fixing holes (V) for countersunk head screws according to DIN 7991

² Fixing holes (C) for socket cap screws according to DIN 912

Fig. 13

Type	D [mm]	K [mm]	F	C ²	V ¹	X	Standard radii [mm]	Y [mm]	Weight [kg/m]
CKR01 CVR01	16,5	10	up to M6	up to M5	up to M5	dependent on radius	150 - 200 - 250 - 300 - 400 - 500 - 600 - 700 - 800 - 900 - 1000	min. 70	1,2
CKR05 CVR05	23	13,5	up to M8	up to M6	up to M6				2,2

Tab. 5

Please indicate the precise rail layout and the desired hole pattern in a drawing. We recommend 80 mm (3.15 in) on the extended length as a gage for the hole pattern.

Non-standard radii are possible as special products. For more information on rail layouts, radii and hole patterns, please contact Rollon Technical Support.

> Slider

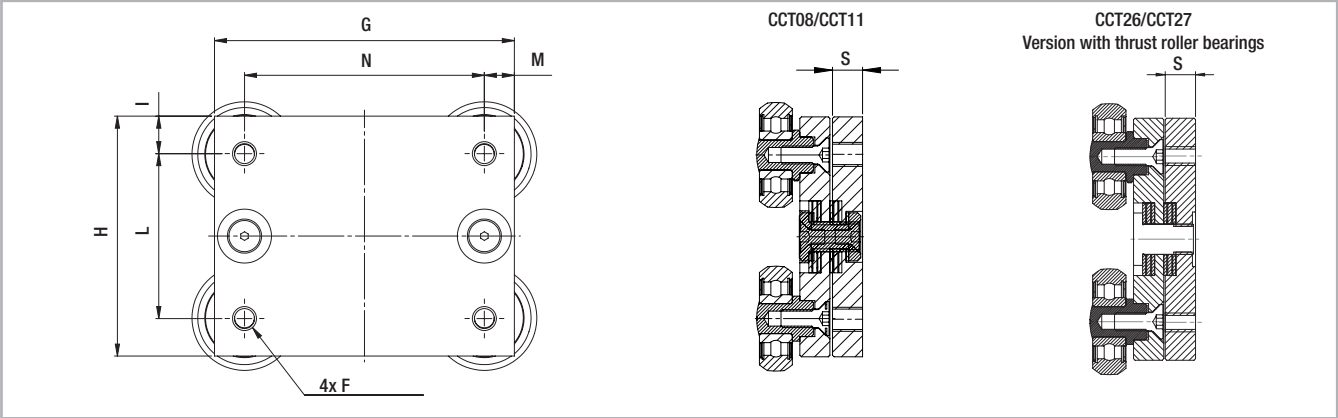


Fig. 14

Type	G [mm]	H [mm]	I [mm]	L [mm]	M [mm]	N [mm]	S [mm]	F	Weight [kg]
CCT08/CCT26	70	50	10	30	10	50	10	M5	0,45
CCT11/CCT27	100	80	12,5	55	10	80	10	M8	1,1

Tab. 6

> Mounted sliders and rails

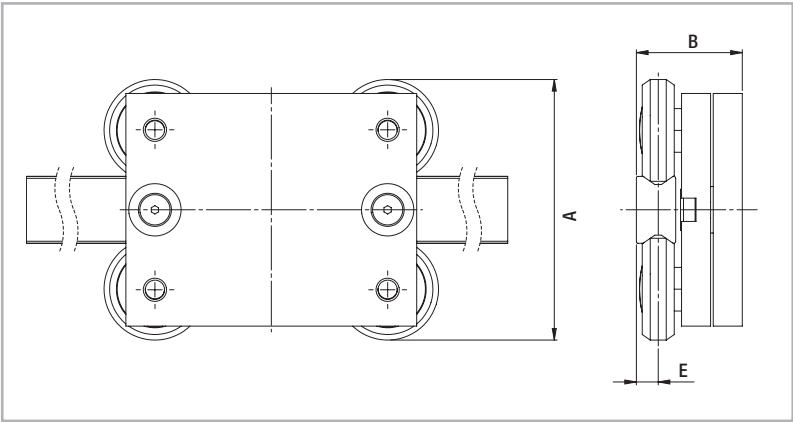


Fig. 15

Configuration	A [mm]	B [mm]	E [mm]
CKR01-CCT08/CCT26 CVR01-CCT08/CCT26	60	32,3	5,7
CKR05-CCT11/CCT27 CVR05-CCT11/CCT27	89,5	36,4	7,5

Tab. 7

> Load capacities

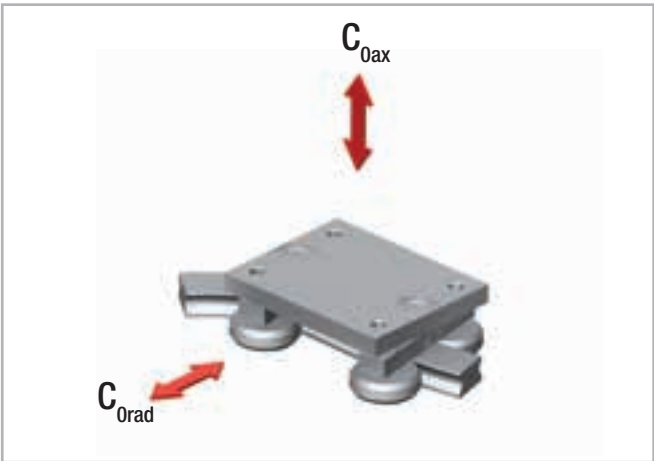


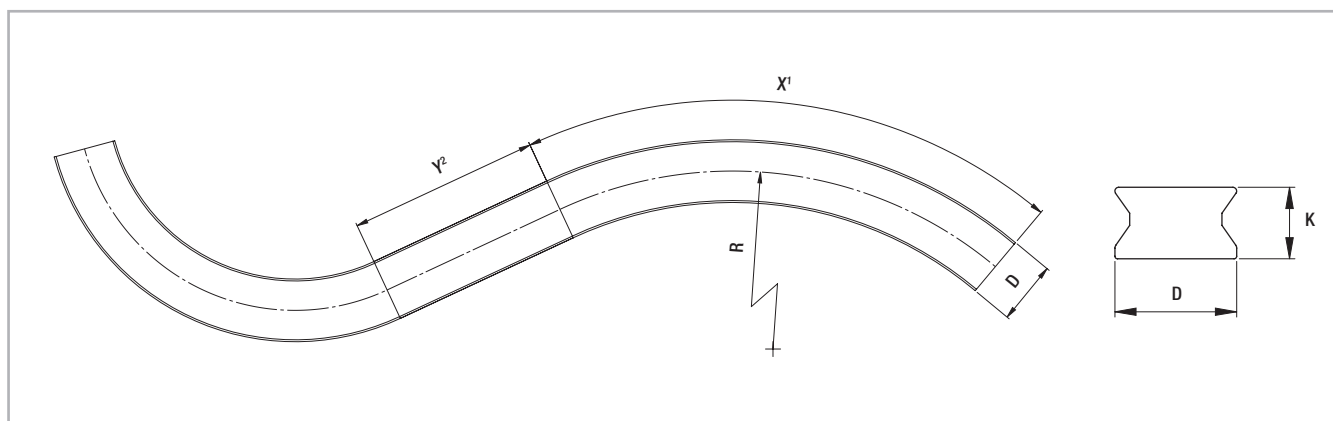
Fig. 16

Slider type	Load capacities	
	C_{0ax} [N]	C_{0rad} [N]
CKR01-CCT08/CCT26 CVR01-CCT08/CCT26	400	570
CKR05-CCT11/CCT27 CVR05-CCT11/CCT27	1130	1615

Resulting moment loads must be absorbed through the use of two sliders

Tab. 8

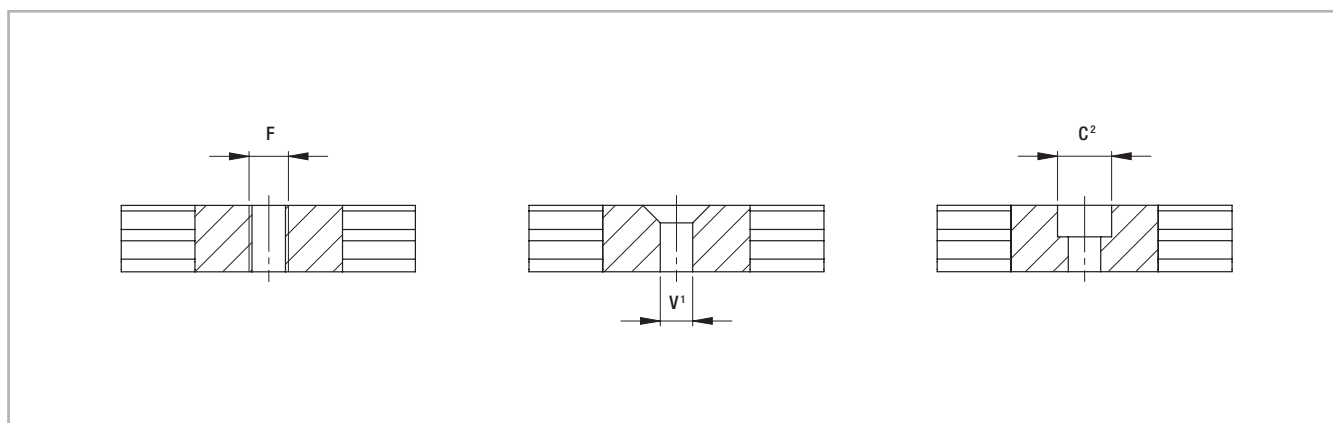
> Rails with constant/variable radii in stainless steel



¹ The max. angle (X) is dependent on the radius

² For curvilinear rails with variable radii, Y must be at least 70 mm

Fig. 17



¹ Fixing holes (V) for countersunk head screws according to DIN 7991

² Fixing holes (C) for socket cap screws according to DIN 912

Fig. 18

Type	D [mm]	K [mm]	F	C ²	V ¹	X	Standard radii [mm]	Y [mm]	Weight [kg/m]
CKRX01 CVRX01	16,5	10	up to M6	up to M5	up to M5	dependent on radius	150 - 200 - 250 - 300 - 400 - 500 - 600 - 700 - 800 - 900 - 1000	min. 70	1,2
CKRX05 CVRX05	23	13,5	up to M8	up to M6	up to M6				2,2

Tab. 9

Please indicate the precise rail layout and the desired hole pattern in a drawing. We recommend 80 mm (3.15 in) on the extended length as a gage for the hole pattern.

Non-standard radii are possible as special products. For more information on rail layouts, radii and hole patterns, please contact Rollon Technical Support.

> Slider in stainless steel

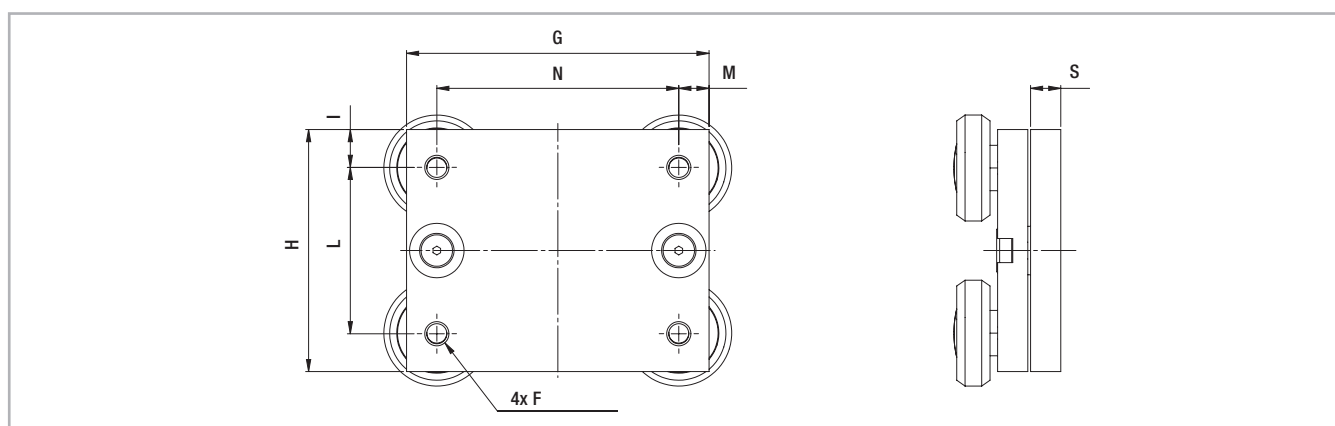


Fig. 19

Type	G [mm]	H [mm]	I [mm]	L [mm]	M [mm]	N [mm]	S [mm]	F	Weight [kg]
CCTX08	70	50	10	30	10	50	10	M5	0,45
CCTX11	100	80	12,5	55	10	80	10	M8	1,1

Tab. 10

> Rail-slider package in stainless steel

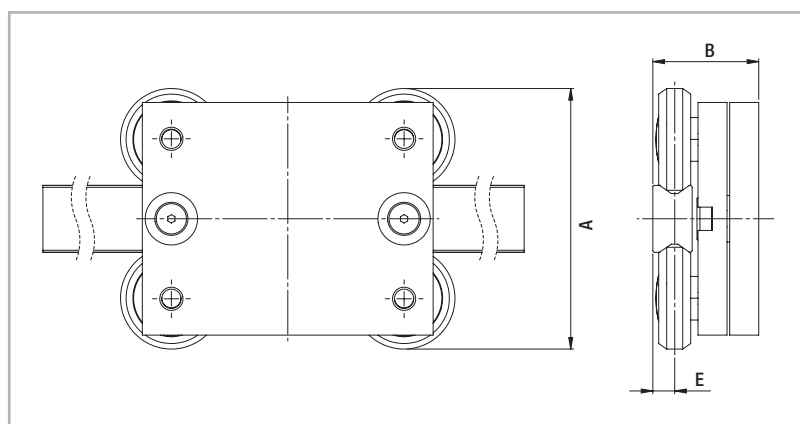


Fig. 20

Configuration	A [mm]	B [mm]	E [mm]
CKRX01-CCTX08 CVRX01-CCTX08	60	32,3	5,7
CKRX05-CCTX11 CVRX05-CCTX11	89,5	36,4	7,5

Tab. 11

> Load capacities

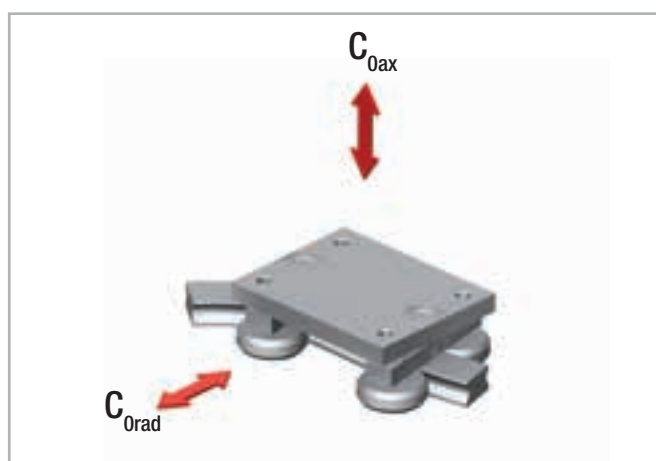


Fig. 21

Slider type	Load capacities	
	C_{0ax} [N]	C_{0rad} [N]
CKRX01-CCTX08 CVRX01-CCTX08	400	570
CKRX05-CCTX11 CVRX05-CCTX11	1130	1615

Resulting moment loads must be absorbed through the use of two sliders

Tab. 12

Technical instructions



> Anticorrosive protection

The Curviline product family comes standard with electrolytic zinc plating with passivation (RolonAloy) for anticorrosion protection. If increased anticorrosive protection is required, application-specific surface treatments

are available on request, e.g. as nickel-plated design with FDA approval for use in the food industry. The Curviline series is also available in stainless steel. For more information, please contact Rollon technical support.

> Lubrication

Roller lubrication

All rollers of the Curviline product family are lubricated for life.

Lubrication of the raceways

Rails must be lubricated before operation. Recommended lubrication intervals are heavily dependent upon the ambient conditions, speed and temperature. Under normal conditions, lubrication is recommended after 100 km operational performance or after an operating period of six months. In critical application cases the interval should be shorter. Please clean the raceways carefully before lubrication.

We recommend a roller bearing lubricant with a lithium base of average consistency.

Proper lubrication during normal conditions:

- reduces friction
- reduces wear
- reduces the load of the contact surfaces through elastic deformations
- reduces running noise

Different lubricants are available by request for special applications:

- FDA-approved lubricant for use in the food industry
- specific lubricant for clean rooms
- specific lubricant for the marine technology sector
- specific lubricant for high and low temperatures

For specific information, contact Rollon technical support.

> Setting the preload

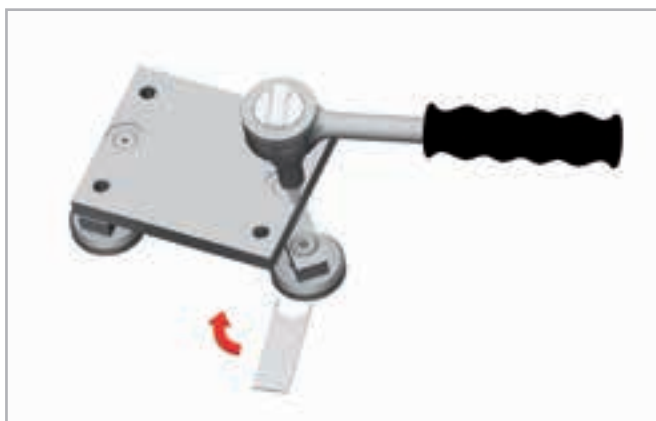


Fig. 22

If the curvilinear rails are delivered as a system, the sliders are already set with no clearance. In this case the fixing screws are secured with Loctite® at the factory.

If delivered separately, or if the sliders should be installed in another track, the eccentric roller pins must be readjusted. Important: The fixing screws must be additionally glued against loosening. The following points must also be observed:

- Wipe the raceways of any dirt and debris.
- Slightly loosen the fixing screws of the roller mounting.
The eccentric roller pins are marked on the bottom.
- Position the slider(s) at the ends of the rail.
- The special flat key provided is inserted from the side onto the hexagonal of the roller to be set (see fig. 22).

Type	Tightening torque [Nm]
CCT08	7
CCT11	12

Tab. 13

- By turning the flat key clockwise the roller is pressed against the raceway and thus reduces the clearance. Observe that with increasing preload, the friction is also increased and thus the service life reduced.
- Hold the roller pin with the adjustment key in the desired position and carefully tighten the fixing screw. The exact tightening torque will be checked later.
- Move the slider on the rail and check the preload over the entire length of the rail. It should move easily and the slider should not have play at any location of the rail.
- Now tighten the fixing screws with the specified tightening torque (see tab. 13), while the flat key holds the angle adjustment of the pin. A special thread in the roller pin secures the set position.

Ordering key



> Constant radius rail / slider system

CKR01	85°	600	890	/2/	CCT08	NIC	R	
							Right or left version	
							Expanded surface protection if deviation from Standard <i>see pg. CL-12 Anticorrosion protection</i>	
							Slider type	<i>see pg. CL-7, tab. 3 ; CL-9, tab.7 ; CL-11, tab.11</i>
							Number of sliders	
							Rails extended length	
							Radius	<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>
Angle								
Rail type		<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>						

Ordering example: CKR01-085°-0600-0890/2/CCT08-NIC-R

Note: Information for right and left side installation and for expanded surface protection is only necessary if required

Notes on ordering: Rail lengths and radii always are indicated with four digits, angles always with three digits and a zero as prefix

Exact specifications (angle, radius, hole pattern, etc.) must be represented in a drawing

> Variable radius rail / slider system

CVR01	39°	200	//23°	400	297	/2/	CCT08	NIC	R	
										Right or left version
										Expanded surface protection if deviation from Standard <i>see pg. CL-8 Anticorrosion protection</i>
							Slider type ;		<i>see pg. CL-7, tab. 3 ; CL-9, tab.7 CL-11, tab.11</i>	
							Number of sliders			
							Rails extended length			
				Radius	<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>					
			Angle							
		Radius	<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>							
	Angle									
Rail type	<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>									

Ordering example: CVR01-039°-0200//023°-0400-0297/2/CCT08-NIC-R

Note: Data for angles and respective radii are in sequential order

Note: Information for right and left side installation and for expanded surface protection is only necessary if required

Notes on ordering: Rail lengths and radii always are indicated with four digits, angles always with three digits and a zero as prefix

Exact specifications (layout, angle, radius, hole pattern, etc.) must be represented in a drawing

> Constant radius rails

CKR01	120°	600	1152	NIC	R	
				Right or left version		
				Expanded surface protection if deviation from Standard <i>see pg. CL-12 Anticorrosion protection</i>		
				Rails extended length		
	Radius	<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>				
Angle						
Rail type		<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>				

Ordering example: CKR01-120°-0600-1152-NIC-R

Note: Information for right and left side installation and for expanded surface protection is only necessary if required

Notes on ordering: Rail lengths and radii always are indicated with four digits, angles always with three digits and a zero as prefix

Exact specifications (angle, radius, hole pattern, etc.) must be represented in a drawing

> Variable radius rails

CVR01	39°	200	//23°	400	297	NIC	R	
							Right or left version	
							Expanded surface protection if deviation from Standard <i>see pg. CL-12 Anticorrosion protection</i>	
							Rails extended length	
							Radius	<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>
			Angle					
		Radius	<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>					
	Angle							
Rail type	<i>see pg. CL-6, tab. 1 ; CL-8, tab. 5 ; CL-10, tab. 9</i>							

Ordering example: CVR01-039°-0200//023°-0400-0297-NIC-R

Note: Data for various angles and respective radii are in sequential order

Note: Information for right and left side installation and for expanded surface protection is only necessary if required

Notes on ordering: Rail lengths and radii always are indicated with four digits, angles always with three digits and a zero as prefix

Exact specifications (layout, angle, radius, hole pattern, etc.) must be represented in a drawing

> Slider

CCT08	NIC	
	Expanded surface protection if deviation from Standard	<i>see pg. CL-12 Anticorrosion protection</i>
Slider type	<i>see pg. CL-7, tab. 3 ; CL-9, tab.7 ; CL-11, tab.11</i>	

Ordering example: CCT08-NIC

Note: Information for expanded surface protection are only necessary when needed