JW WINCO®
A Ganter Company

Highlights

Linear Slides, Cam Roller Linear Guide Rail Systems

Standard Parts. Winco.

All linear slides consist of an outer rail with a runner moving inside. Rolling bearing balls lie between the rail and the runner and are kept at a distance and in position by means of a ball cage.

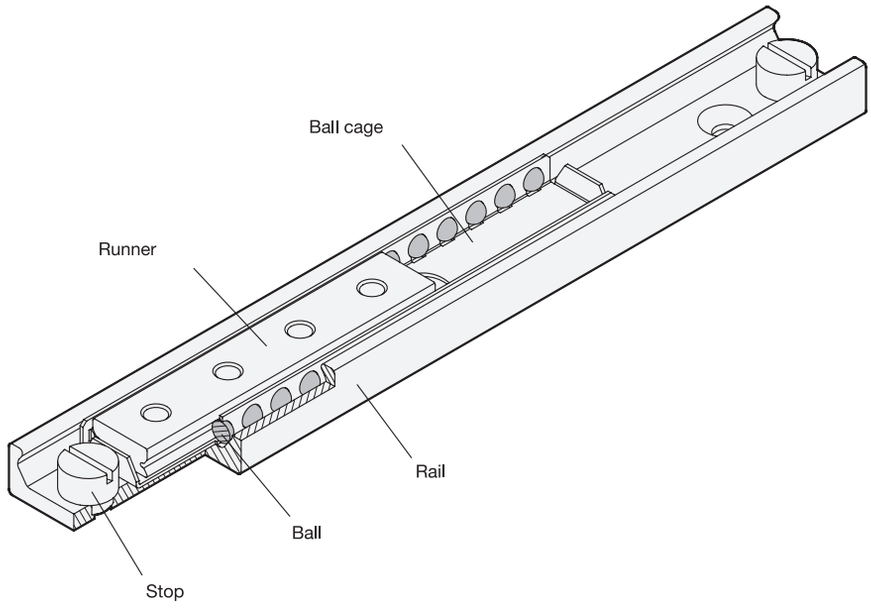
Rail and runner are made of heat-treated steel, enabling use in industrial environments with higher requirements on load rating, smooth running and service life.

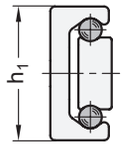
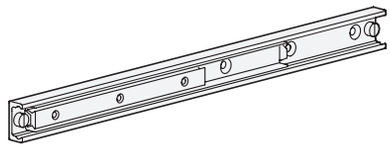
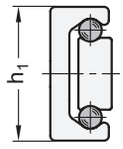
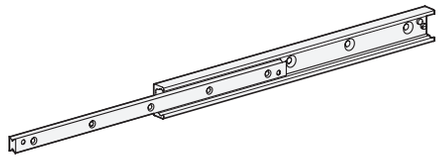
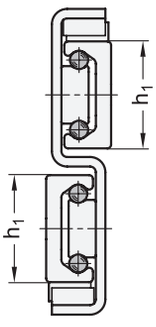
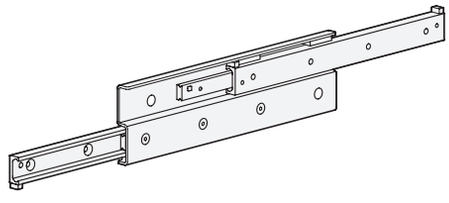
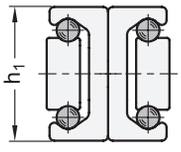
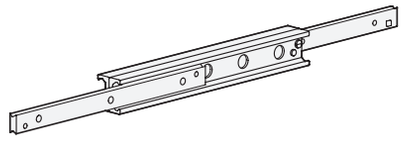
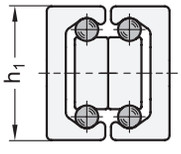
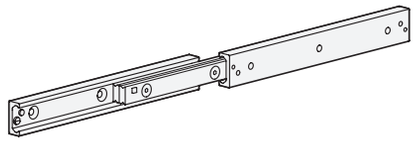
All designs are available in the nominal rail dimensions h_1 = 28, 35 and 43 mm and may also be supplied beyond the standard range in lengths from 130 mm to 1970 mm, appropriate for individual requirements.

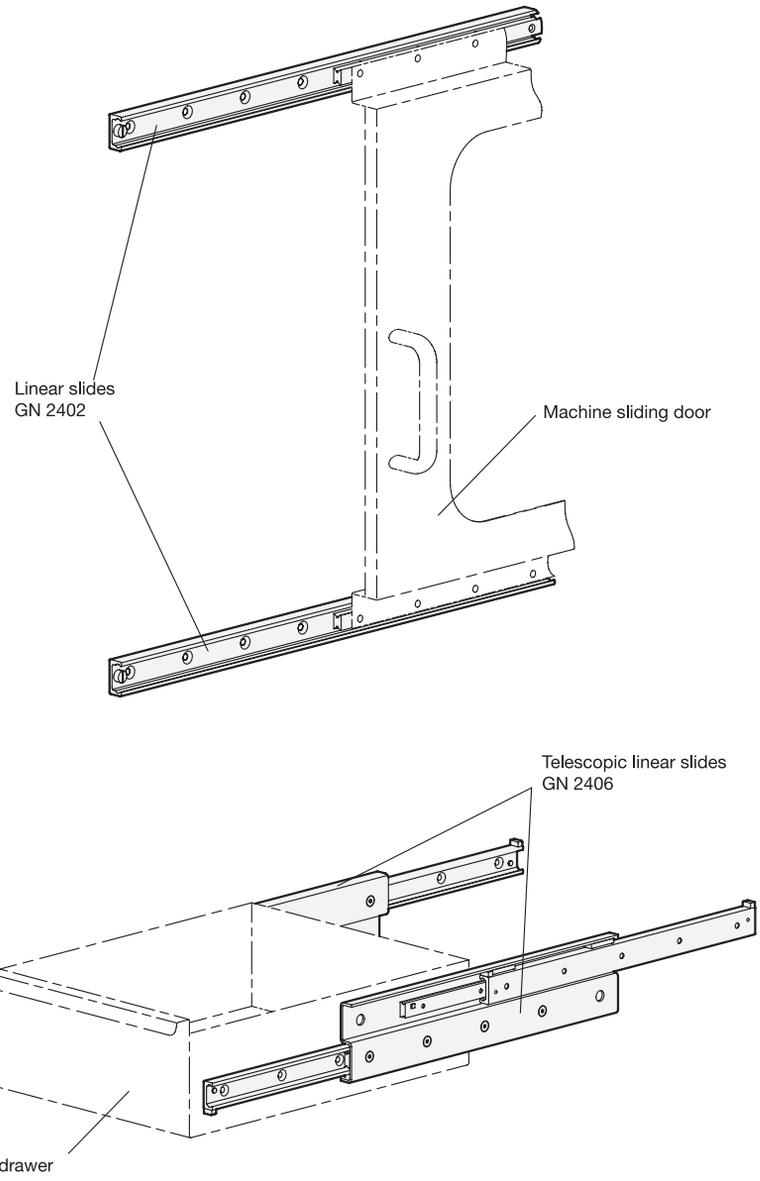
Linear slides are normally adjusted in such a way that a clearance-free (i.e. slightly pre-loaded) match-up is created between rail and runner. The raceways of the rails and runners are induction hardened, which combined with rolling bearing balls results in lower wear and longer service life. Linear slides are permanently lubricated with a high-quality special grease designed for linear guide rail systems.

Depending on the requirements, a variety of different types is available. Sliding distances of the runners can be inside, partly outside or entirely outside the length of the rails. Fully extendable telescopic linear slides consist of linear slides directly interconnected at the rails, the runners or with the help of an additional plate (intermediate profile).

To mount linear slides, countersunk holes in the rails and, depending on the type, threaded or countersunk holes in the runners are available. The compact design is generally advantageous for use in confined spaces.



Linear slides with no extension **GN 2402** → *page 5*		
Telescopic linear slides with partial extension **GN 2404** → *page 6*		
Telescopic linear slides with full extension, with S-shaped intermediate profile **GN 2406** → *page 7*		
Telescopic linear slides with full extension, with rails connected in H-shape **GN 2408** → *page 8*		
Telescopic linear slides with full extension, with runners connected in dual configuration **GN 2410** → *page 9*		


Linear slides
GN 2402
Machine sliding door
Telescopic linear slides
GN 2406
Tool drawer

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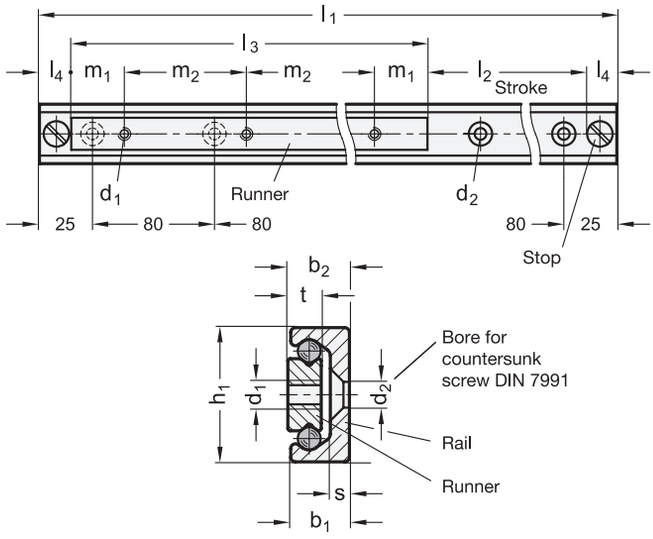


Metric

Metric table

1	2	3											
h_1	l_3	l_1 - l_2 Length - Stroke			b_1	b_2	d_1 Thread	d_2	l_4 max.	m_1	m_2	s	t
28 *1.10*	60 *2.36*	130 - 34 *5.11 - 1.34*	210 - 114 *8.26 - 4.48*	370 - 274 *14.56 - 10.78*	12.3 *0.48*	12.9 *0.51*	M 5	5.5 *0.22*	18 *0.71*	10 *0.39*	20 *0.79*	4 *0.16*	7 *0.28*
28 *1.10*	80 *3.15*	290 - 174 *11.41 - 6.85*	450 - 334 *17.71 - 13.14*	610 - 494 *24.01 - 19.44*	12.3 *0.48*	12.9 *0.51*	M 5	5.5 *0.22*	18 *0.71*	10 *0.39*	20 *0.79*	4 *0.16*	7 *0.28*
28 *1.10*	130 *5.12*	290 - 124 *11.41 - 4.88*	450 - 284 *17.71 - 11.18*	690 - 524 *27.16 - 20.62*	12.3 *0.48*	12.9 *0.51*	M 5	5.5 *0.22*	18 *0.71*	25 *0.98*	80 *3.15*	4 *0.16*	7 *0.28*
28 *1.10*	210 *8.27*	450 - 204 *17.71 - 8.03*	610 - 364 *24.01 - 14.33*	1010 - 764 *39.76 - 30.07*	12.3 *0.48*	12.9 *0.51*	M 5	5.5 *0.22*	18 *0.71*	25 *0.98*	80 *3.15*	4 *0.16*	7 *0.28*
35 *1.38*	130 *5.12*	290 - 114 *11.41 - 4.48*	450 - 274 *17.71 - 10.78*	770 - 594 *30.31 - 23.38*	16.5 *0.65*	17 *0.67*	M 6	6.5 *0.26*	23 *0.91*	25 *0.98*	80 *3.15*	3.5 *0.14*	10 *0.39*
35 *1.38*	210 *8.27*	450 - 194 *17.71 - 7.63*	690 - 434 *27.16 - 13.50*	1010 - 754 *39.76 - 29.68*	16.5 *0.65*	17 *0.67*	M 6	6.5 *0.26*	23 *0.91*	25 *0.98*	80 *3.15*	3.5 *0.14*	10 *0.39*
35 *1.38*	290 *11.42*	610 - 274 *24.01 - 10.79*	930 - 594 *36.61 - 23.38*	1330 - 994 *52.36 - 39.09*	16.5 *0.65*	17 *0.67*	M 6	6.5 *0.26*	23 *0.91*	25 *0.98*	80 *3.15*	3.5 *0.14*	10 *0.39*
43 *1.69*	210 *8.27*	450 - 194 *17.71 - 7.63*	690 -434 *27.16 - 13.50*	1010 - 754 *39.76 - 29.68*	21 *0.83*	22 *0.87*	M 8	8.5 *0.33*	23 *0.91*	25 *0.98*	80 *3.15*	4.5 *0.18*	13.5 *0.53*
43 *1.69*	370 *14.57*	770 - 354 *30.31 - 13.93*	1010 - 594 *39.76 - 23.38*	1490 - 1074 *58.66 - 42.28*	21 *0.83*	22 *0.87*	M 8	8.5 *0.33*	23 *0.91*	25 *0.98*	80 *3.15*	4.5 *0.18*	13.5 *0.53*

Specification

- Rail / runner
  Heat-treated steel
  - Zinc plated, blue passivated finish
  - Hardened raceways
- Balls
  Rolling bearing steel, hardened
- Ball cage
  Steel, zinc plated
- RoHS compliant

On request

- Other lengths (based on the standard lengths in the grid dimension of 80 mm)
- Special lengths (bore, start and end distances)
- More than one runner, special cages

Information

GN 2402 linear slides without extension are used, for example, for drawers and sliding doors, or in jigmaking for a sliding motion in linear direction.

The sliding distance of the runner lies within the length of the rail l_1. The limitation of the max. stroke should be ensured by external elements. The stops of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

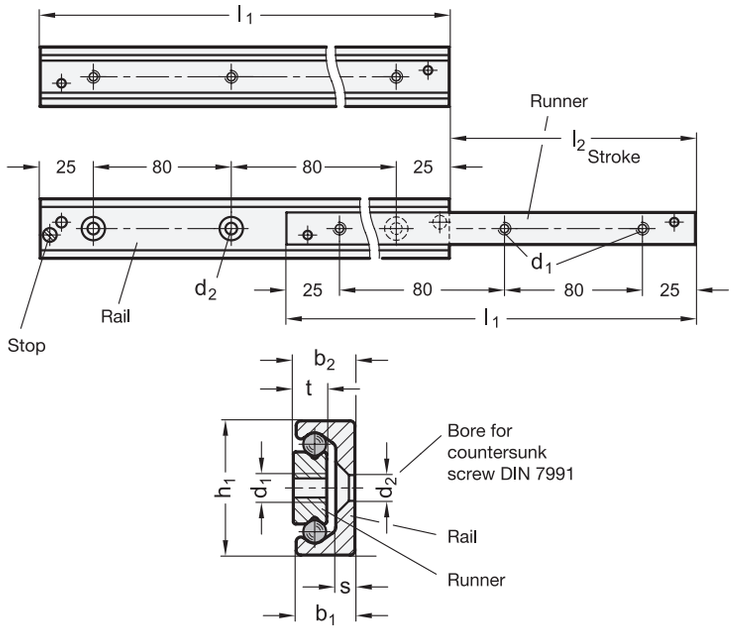
see also...
- *Structure of Linear Slides* → *page 2*
- *Structure of Cam Roller Linear Guide Rail Systems* → *page 12*
- *Load Rating of Telescopic Linear Slides* → *page 10*

How to order

1 2 3

GN 2402-28-60-130

1	**Height h_1**
2	**Length l_3 of the runner**
3	**Length l_1 of the rail**



Metric

Metric table

Dimensions in: millimeters - *inches*

h_1	l_1 - l_2 Length - Stroke						b_1	b_2	d_1 Thread	d_2	s	t
28 *1.10*	130 - 74 *5.11 - 2.91*	210 - 116 *8.26 - 4.56*	290 - 148 *11.41 - 5.82*	370 - 190 *14.56 - 7.48*	450 - 232 *17.71 - 9.13*	530 - 274 *20.86 - 10.78*	12.3 *0.48*	12.9 *0.51*	M 5	5.5 *0.22*	4 *0.16*	7 *0.28*
35 *1.38*	290 - 159 *11.41 - 6.26*	370 - 203 *14.56 - 7.99*	450 - 247 *17.71 - 9.72*	530 - 279 *20.86 - 10.98*	610 - 323 *24.01 - 12.71*	690 - 367 *27.16 - 14.44*	16.5 *0.65*	17 *0.67*	M 6	6.5 *0.26*	3.5 *0.14*	10 *0.39*
43 *1.69*	370 - 208 *14.56 - 8.18*	450 - 243 *17.71 - 9.56*	530 - 278 *20.86 - 10.94*	610 - 313 *24.01 - 12.32*	690 - 363 *27.16 - 14.29*	770 - 398 *30.31 - 15.67*	21 *0.83*	22 *0.87*	M 8	8.5 *0.33*	4.5 *0.18*	13.5 *0.53*

Specification

- Rail / runner
  Heat-treated steel
  - Zinc plated, blue passivated finish
  - Hardened raceways
- Balls
  Rolling bearing steel, hardened
- Ball cage
  Steel, zinc plated
- RoHS compliant

On request

- Other lengths (based on the standard lengths in the grid dimension of 80 mm)
- Special lengths (bore, start and end distances)

Information

GN 2404 telescopic linear slides with partial extension are used, for example, for drawers and sliding doors, or in jigmaking for a sliding motion in linear direction. Rail and runner are equal in length.

The one-sided sliding distance is limited to slightly more than half the rail length, which corresponds to a partial extension. For a full extension, the support screw can be removed, thus extending the stroke to slightly more than the complete rail length.

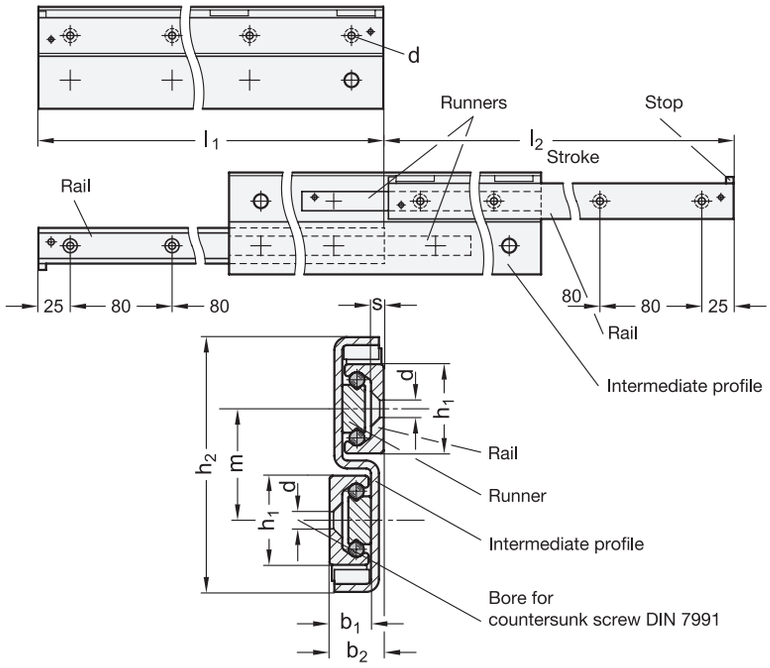
The limitation of the max. stroke should be ensured by external elements. The stops of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

see also...
- *Structure of Linear Slides → page 2*
- *Structure of Cam Roller Linear Guide Rail Systems → page 12*
- *Load Rating of Telescopic Linear Slides → page 10*

How to order

GN 2404-28-130

1	**Height h_1**
2	**Length l_1 of the rail**



Metric

3 Type

E With one side extension

Metric table

Dimensions in: millimeters - *inches*

1 h_1	2 l_1 - l_2 Length - Stroke					b_1	b_2	d	h_2	m	s
28 *1.10*	290 - 296 *11.41 - 11.65*	370 - 380 *14.56 - 14.96*	450 - 464 *17.71 - 18.26*	530 - 548 *20.86 - 21.57*	610 - 630 *24.01 - 24.80*	12.3 *0.48*	17 *0.67*	5.5 *0.22*	80 *3.15*	35 *1.38*	4 *0.16*
35 *1.38*	450 - 494 *17.71 - 19.44*	530 - 558 *27.16 - 21.96*	690 - 734 *14.56 - 28.89*	850 - 886 *33.46 - 34.88*	-	16.5 *0.65*	22.5 *0.89*	6.5 *0.26*	97 *3.82*	43 *1.69*	3.5 *0.14*
43 *1.69*	530 - 556 *20.86 - 21.88*	690 - 726 *27.16 - 28.58*	850 - 866 *33.46 - 34.09*	1010 - 1036 *39.76 - 40.78*	1490 - 1516 *58.66 - 59.68*	21 *0.83*	28 *1.10*	8.5 *0.33*	117 *4.61*	52 *2.05*	4.5 *0.18*

Specification

- Rail / runner
  Heat-treated steel
  - Zinc plated, blue passivated finish
  - Hardened raceways
- Balls
  Rolling bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Intermediate metal sheet of ball cage
  Steel, zinc plated
- RoHS compliant

On request

- Other lengths (based on the standard lengths in the grid dimension of 80 mm)
- Special lengths (bore, start and end distances)
- Extension on both sides (Type D)

Information

GN 2406 telescopic linear slides with full extension consist of two linear slides linked by an intermediate profile. They are used when the lateral space requires a small width, and at the same time large strokes are needed. The S-shape of the intermediate profile gives the configuration a high degree of sturdiness.

The rails and the intermediate profile are equal in length. Both rails can be extended to such an extent that a stroke is reached which is longer than the base length l_1.

The limitation of the max. stroke should be ensured by external elements. The stops of the rail are dampened by elastomers and have been designed to guard against the inadvertent extraction of the runner from the rail.

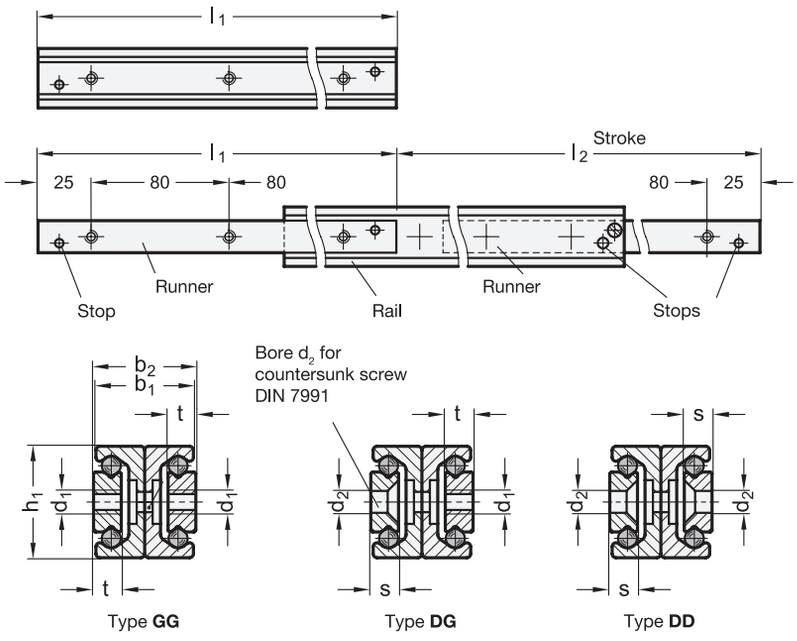
see also...
- *Structure of Linear Slides → page 2*
- *Structure of Cam Roller Linear Guide Rail Systems → page 12*
- *Load Rating of Telescopic Linear Slides → page 10*

How to order

1 2 3

GN 2406-28-290-E

1	**Height h_1**
2	**Length l_1 of the rail**
3	**Type**



Metric

3 Type

GG Runner
with thread on both sides

DG Runner
with 1 countersunk hole
and 1 thread

DD Runner
with countersunk hole on both sides

Metric table

1 h_1	2 l_1 - l_2 Length - Stroke				b_1	b_2	d_1 Thread	d_2	s	t
28 *1.10*	210 - 232 *8.26 - 9.13*	370 - 380 *14.56 - 14.96*	450 - 464 *17.71 - 18.26*	530 - 548 *20.86 - 21.57*	24.6 *0.97*	25.8 *1.02*	M 5	5.5 *0.22*	4 *0.16*	7 *0.28*
35 *1.38*	370 - 406 *14.56 - 15.98*	450 - 494 *17.71 - 19.44*	530 - 558 *20.86 - 21.96*	610 - 646 *24.01 - 25.43*	33 *1.30*	34 *1.34*	M 6	6.5 *0.26*	3.5 *0.14*	10 *0.39*
43 *1.69*	450 - 486 *17.71 - 19.13*	610 - 626 *24.01 - 24.64*	770 - 796 *30.31 - 31.33*	930 - 966 *36.61 - 38.03*	42 *1.65*	44 *1.73*	M 8	8.5 *0.33*	4.5 *0.18*	13.5 *0.53*

Specification

- Rail / runner
  Heat-treated steel
  - Zinc plated, blue passivated finish
  - Hardened raceways
- Balls
  Rolling bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rail connection
  - Stainless steel blank rivets
    (h_1 = 28 mm and 35 mm)
  - Zinc plated steel screws
    (h_1 = 43 mm)
- RoHS compliant

On request

- Other lengths (based on the standard lengths in the grid dimension of 80 mm)
- Special lengths (bore, start and end distances)
- Version with defined movement of the rail (only for stroke on both sides)

Information

GN 2408 telescopic linear slides with full extension consist of two interconnected linear slides. They are used, for example, in handling or automation applications and in jigmaking for straight-line travel when large strokes are required with a low construction height of the rail. The H-shape of the rails gives the configuration a high degree of sturdiness.

The rails and runners are equal in length. Both rails can be extended to such an extent that a stroke is reached which is longer than the base length l_1. Removing the stop screws from the rails allows a stroke of the runners on both sides. The position of the rail is defined only at the two end positions.

Depending on the requirements, three types of mounting holes are available. The limitation of the max. stroke should be ensured by external elements. The stops of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

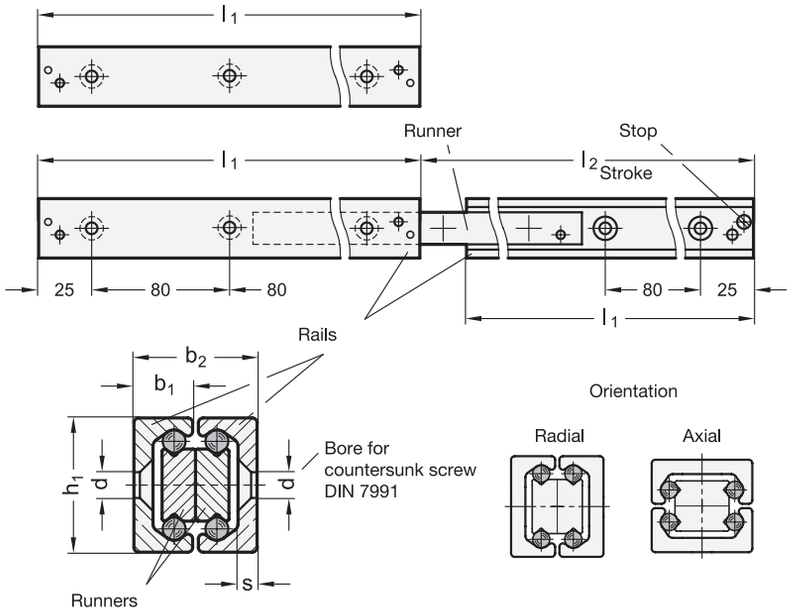
see also...
- *Structure of Linear Slides → page 2*
- *Structure of Cam Roller Linear Guide Rail Systems → page 12*
- *Load Rating of Telescopic Linear Slides → page 10*

How to order

1 2 3

GN 2408-28-210-GG

1	**Height h_1**
2	**Length l_1 of the rail**
3	**Type**



Metric

Metric table

Dimensions in: millimeters - *inches*

1	2							
h_1	$l_1 - l_2$ Length - Stroke				b_1	b_2	d	s
28 *1.10*	210 - 232 *8.26 - 9.13*	370 - 380 *14.56 - 14.96*	450 - 464 *17.71 - 18.26*	530 - 548 *20.86 - 21.57*	12.3 *0.48*	25.8 *1.02*	5.5 *0.22*	4 *0.16*
35 *1.38*	370 - 406 *14.56 - 15.98*	450 - 494 *17.71 - 19.44*	530 - 558 *20.86 - 21.96*	610 - 646 *24.01 - 25.43*	16.5 *0.65*	34 *1.34*	6.5 *0.26*	3.5 *0.14*
43 *1.69*	450 - 486 *17.71 - 19.13*	610 - 626 *24.01 - 24.64*	770 - 796 *30.31 - 31.33*	930 - 966 *36.61 - 38.03*	21 *0.83*	44 *1.73*	8.5 *0.33*	4.5 *0.18*

Specification

- Rail / runner
  Heat-treated steel
  - Zinc plated, blue passivated finish
  - Hardened raceways
- Balls
  Rolling bearing steel, hardened
- Ball cage
  Steel, zinc plated
- Rail connection
  Screw
  Steel, zinc plated
- RoHS compliant

On request

- Other lengths (based on the standard lengths in the grid dimension of 80 mm)
- Special lengths (bore, start and end distances)

Information

GN 2410 telescopic linear slides with full extension consist of two linear slides connected at the runners. They are used, for example, in handling or automation applications and in jigmaking for straight-line travel when large strokes are required with a low construction height of the rails.

The dual configuration has the advantage that both the radial and axial load capacities are identical and that it proves to be less susceptible to dirt in practical use.

The rails and runners are equal in length. Both rails can be extended to such an extent that a stroke is reached which is longer than the base length l_1. Removing the stop screws from the rails allows a stroke of the rails on both sides.

The limitation of the max. stroke should be ensured by external elements. The stops of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

see also...
- *Structure of Linear Slides → page 2*
- *Structure of Cam Roller Linear Guide Rail Systems → page 12*
- *Load Rating of Telescopic Linear Slides → page 10*

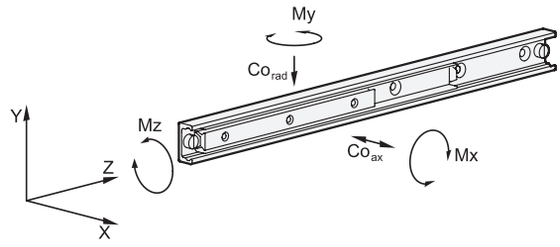
How to order		
GN 2410-28-210	1	**Height h_1**
	2	**Length l_1 of the rail**

Load Rating of Telescopic Linear Slides

Sorted by Series Numbers

When selecting a suitable linear slide, it is primarily the available installation space, the desired stroke and the load to be carried which must be taken into consideration. The values listed below can be used as a guidance in selecting a suitable nominal rail size and refer in each case to one linear slide. Depending on the application, appropriate safety factors should be taken into account.

The load rating details are non-binding guide values given without liability and do not constitute a guarantee of quality. The user must determine in each individual case whether a product is suitable for the intended application. Environmental factors and aging may affect the stated values.



Static load

Part number		Load ratings		Permissible load torques		
		Co_{rad}	Co_{ax}	M_x	M_y	M_z
GN 2402	-28- 60-...	3580 N *805 lbf*	2500 N *562 lbf*	37 Nm	25 Nm	18 Nm
	-28- 80-...	4780 N *1075 lbf*	3345 N *752 lbf*	65 Nm	45 Nm	23 Nm
	-28-130-...	7765 N *1746 lbf*	5435 N *1222 lbf*	166 Nm	117 Nm	38 Nm
	-28-210-...	12545 N *2820 lbf*	8780 N *1974 lbf*	430 Nm	300 Nm	62 Nm
	-35-130-...	9980 N *2244 lbf*	6985 N *1570 lbf*	219 Nm	156 Nm	50 Nm
	-35-210-...	16125 N *3625 lbf*	11290 N *2538 lbf*	560 Nm	397 Nm	87 Nm
	-35-290-...	22270 N *5006 lbf*	15590 N *3505 lbf*	1085 Nm	745 Nm	109 Nm
	-43-210-...	23140 N *5202 lbf*	16200 N *3642 lbf*	790 Nm	552 Nm	157 Nm
	-43-370-...	40775 N *9167 lbf*	28540 N *6416 lbf*	2445 Nm	1710 Nm	275 Nm
GN 2404	-28-130	645 N *145 lbf*	452 N *102 lbf*	30 Nm	23 Nm	17 Nm
	-28-210	1165 N *262 lbf*	816 N *183 lbf*	86 Nm	60 Nm	27 Nm
	-28-290	2015 N *453 lbf*	1410 N *317 lbf*	190 Nm	135 Nm	41 Nm
	-28-370	2540 N *571 lbf*	1780 N *400 lbf*	309 Nm	215 Nm	52 Nm
	-28-450	3065 N *689 lbf*	2145 N *482 lbf*	540 Nm	316 Nm	64 Nm
	-28-530	3595 N *808 lbf*	2515 N *565 lbf*	625 Nm	435 Nm	74 Nm
	-35-290	2100 N *472 lbf*	1470 N *330 lbf*	218 Nm	155 Nm	56 Nm
	-35-370	2685 N *604 lbf*	1880 N *423 lbf*	348 Nm	247 Nm	69 Nm
	-35-450	3270 N *735 lbf*	2285 N *514 lbf*	515 Nm	365 Nm	80 Nm
	-35-530	4350 N *978 lbf*	3045 N *685 lbf*	787 Nm	553 Nm	101 Nm
	-35-610	4930 N *1108 lbf*	3450 N *776 lbf*	1025 Nm	722 Nm	113 Nm
	-35-690	5510 N *1239 lbf*	3860 N *868 lbf*	1295 Nm	914 Nm	125 Nm
	-43-370	3540 N *796 lbf*	2480 N *558 lbf*	444 Nm	313 Nm	119 Nm
	-43-450	4905 N *1103 lbf*	3435 N *772 lbf*	735 Nm	514 Nm	151 Nm
	-43-530	6305 N *1417 lbf*	4415 N *993 lbf*	1090 Nm	766 Nm	184 Nm
	-43-610	7725 N *1737 lbf*	5410 N *1216 lbf*	1525 Nm	1065 Nm	210 Nm
	-43-690	8185 N *1840 lbf*	5730 N *1288 lbf*	1850 Nm	1295 Nm	240 Nm
	-43-770	9490 N *2133 lbf*	6530 N *1468 lbf*	2405 Nm	1685 Nm	273 Nm

Load Rating of Telescopic Linear Slides

Sorted by Series Numbers

Part number		Load ratings C_{0rad}
GN 2406	-28- 290-E	587 N *132 lbf*
	-28- 370-E	793 N *178 lbf*
	-28- 450-E	999 N *225 lbf*
	-28- 530-E	1205 N *271 lbf*
	-28- 610-E	1510 N *339 lbf*
	-35- 450-E	1265 N *284 lbf*
	-35- 530-E	1700 N *382 lbf*
	-35- 690-E	2150 N *483 lbf*
	-35- 850-E	2830 N *636 lbf*
	-43- 530-E	2140 N *481 lbf*
	-43- 690-E	2885 N *649 lbf*
	-43- 850-E	4010 N *901 lbf*
	-43-1010-E	4755 N *1069 lbf*
	-43-1490-E	3820 N *859 lbf*

Part number		Load ratings C_{0rad}
GN 2408	-28-210-...	447 N *100 lbf*
	-28-370-...	1000 N *225 lbf*
	-28-450-...	1205 N *271 lbf*
	-28-530-...	1140 N *256 lbf*
	-35-370-...	1035 N *233 lbf*
	-35-450-...	1265 N *284 lbf*
	-35-530-...	1705 N *383 lbf*
	-35-610-...	1930 N *434 lbf*
	-43-450-...	1890 N *425 lbf*
	-43-610-...	3035 N *682 lbf*
	-43-770-...	3145 N *707 lbf*
	-43-930-...	2580 N *580 lbf*

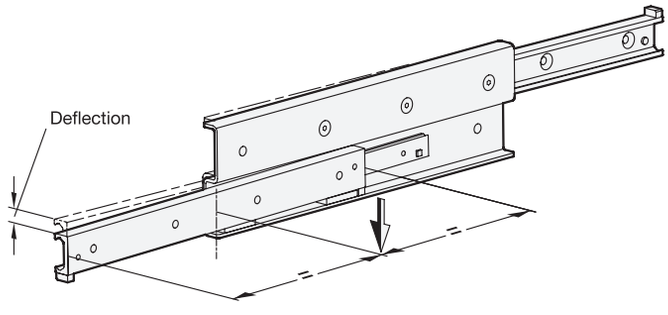
Part number		Load ratings C_{0rad}
GN 2410	-28-210	444 N *99.82 lbf*
	-28-370	496 N *112 lbf*
	-28-450	405 N *91.05 lbf*
	-28-530	342 N *76.88 lbf*
	-35-370	534 N *120 lbf*
	-35-450	439 N *98.69 lbf*
	-35-530	403 N *90.60 lbf*
	-35-610	346 N *77.78 lbf*
	-43-450	1370 N *308 lbf*
	-43-610	1115 N *251 lbf*
	-43-770	870 N *196 lbf*
	-43-930	714 N *161 lbf*

For telescopic linear slides, which consist of two linear slides assembled together, no information is given on the permissible load torques as these are normally used for paired applications. Loads of these dimensions only occur to a minor degree because it may be assumed that the surrounding construction has sufficient rigidity. Transferring load torques within certain limits is permitted.

Static load and deflection

The load values given in the tables refer to a maximum permissible force allowed to act in the middle of the fully extended profile rail at the third segment.

If the specified values are observed, a minor deflection occurs at the end of the runner or of the rail when the telescopic linear slide is fully extended. This has normally no detrimental effect on the proper function of the application. If required, guide values may be given on request.



Mounting screws, assignment of the mounting holes

The standard mounting hardware are DIN 7991-10.9 countersunk screws, which are to be mounted with the recommended tightening torques. Depending on the type, it may not be possible to reach / use all mounting holes. In general, these holes may remain unused. In exceptional cases, especially in case of stroke on both sides, the mounting holes can be accessed by loosening the stop screws and by pulling out the runner. The stop screws are then put back in place.

Traversal speed, cage slip

The traversal speed of linear slides may be up to 0.8 m/s. The particular application and the installation length can have an effect on this value. In the event of rapid changes of direction and high acceleration forces, cage slip may occur in some cases, especially with long ball cages. In such cases, the cage does not move synchronously with half the speed of the runner, but gradually loses its correct position owing to the slip. Whenever possible, running a blank stroke to the end of the travel distance should be provided for repositioning the cage.

Cam Roller Linear Guide Rail Systems

Structure

Cam roller linear guide rail systems allow a reliable and economical linear movement of hardware modules. They are characterized by low-maintenance operation, long service life as well as dynamic and quiet running. These are attributes which make cam roller linear guide rail systems indispensable components for efficient and safe devices and systems with low energy requirements.

The product range includes all components necessary for constructing cam roller linear guide rail systems that are compact and easy to assemble. All cam roller inear guide rail systems consist of one outer cam roller linear guide rail with cam rollers or cam roller carriages moving inside the rail.

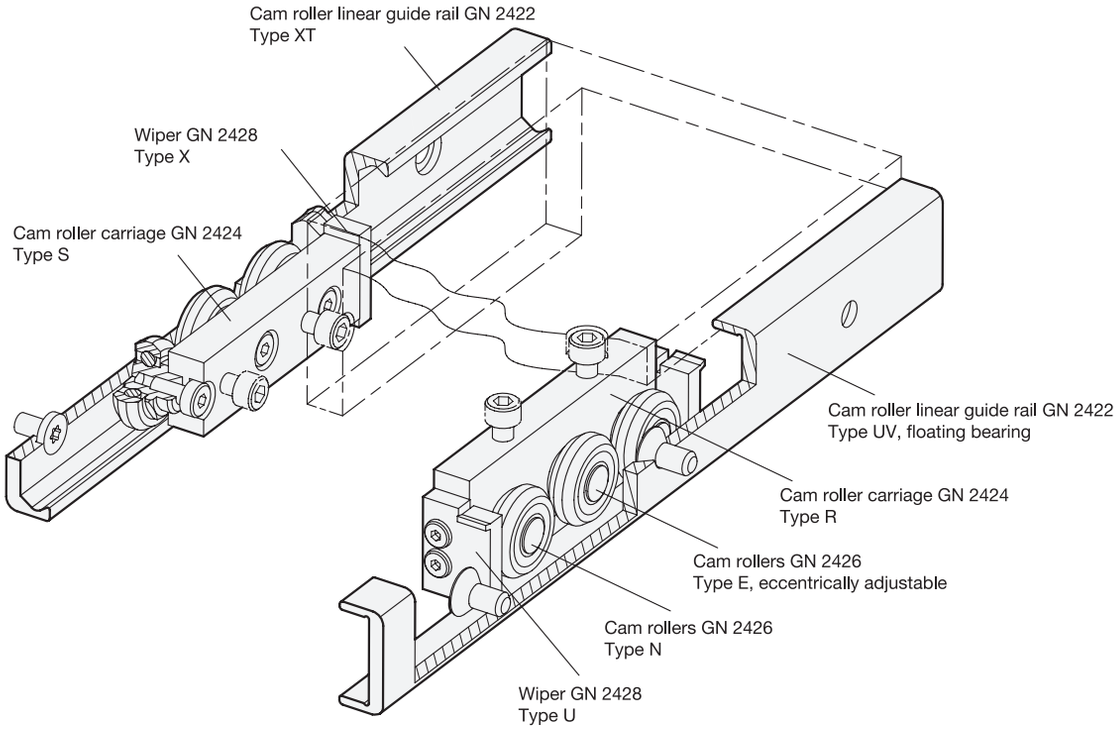
Cam roller linear guide rails are the basis for cam roller linear guide rail systems. They can be designed as fixed or floating bearing versions, with the fixed bearing version guiding the rollers running inside the rail on two levels, while the floating bearing version does so only on one level. By combining both versions, any misalignments or parallelism errors in the connected construction can be compensated. Complex preliminary work due to the precise machining of surrounding parts can thus be kept to a minimum. Both rail versions can be mounted in two ways: cylindrical countersunk holes with flat head screws or 90° conical holes for self-centering mounting.

Cam roller carriages are available in 3 different types of designs, differing by their radial or axial mounting option, their material, and their degree of sealing. All cam roller carriages are equipped with 3 cam rollers, with the middle one always supplied with an eccentrically adjustable bearing pivot for determining the clearance or initial tension inside the rail. Depending on the rail version, a wiper is mounted on either end of the cam roller carriage.

Cam rollers are similar in structure to deep-groove ball bearings, with a non-detachable bearing pivot used as mounting point.

For special applications, cam rollers and wipers can also be supplied separately from the cam roller carriages under separate series numbers.

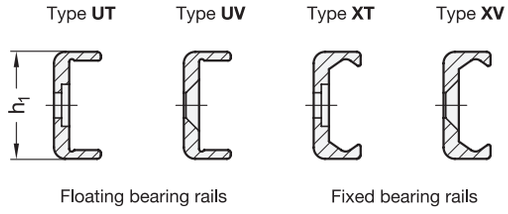
All design variants are available in the nominal rail dimensions h_1 = 18, 28, 35 and 43 mm. Beyond the standard range, they can also be supplied in lengths of up to 3600 mm in one piece, or above that as combined rails for individual requirements.



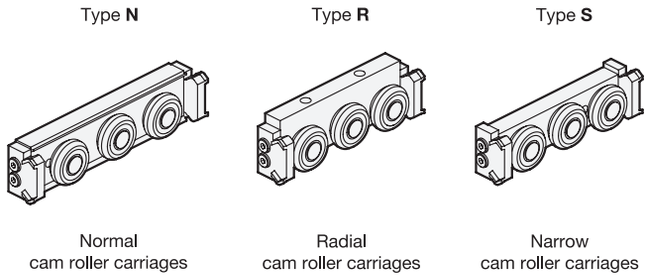
To ensure maximum flexibility, cam roller linear guide rail systems are constructed from the components listed below. Depending on the requirements, the appropriate components can be supplied in the desired quantity. Because the cam roller linear guide rails and the cam roller carriages must be assembled separately in many applications, these items will be supplied unassembled and packed separately.

Upon request, fully pre-assembled cam roller linear guide rail systems consisting of GN 2422 cam roller linear guide rails and GN 2424 cam roller carriages are available.

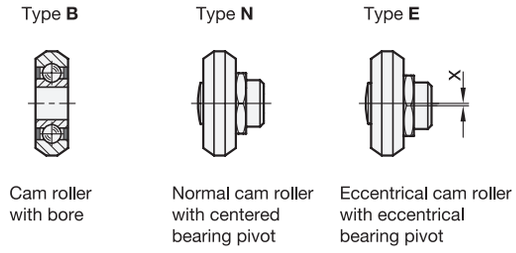
Cam roller linear guide rails
GN 2422 → *page 15*



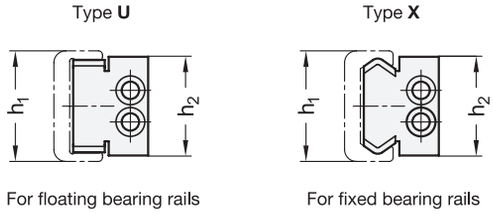
Cam roller carriages
for cam roller linear guide rails
GN 2424 → *page 16*



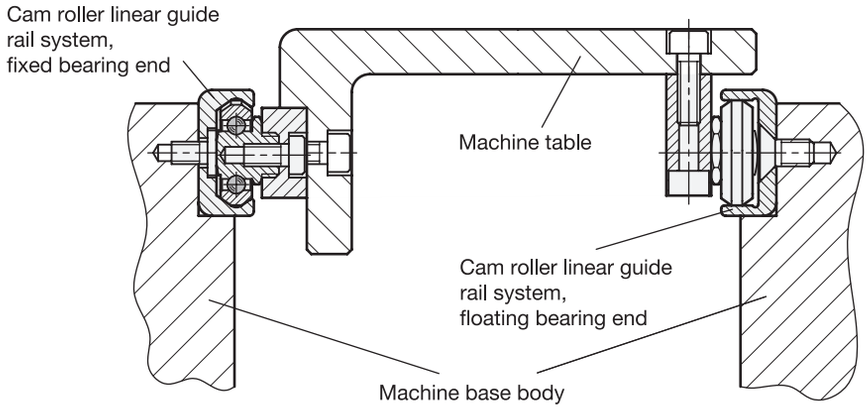
Cam rollers
for cam roller linear guide rails
GN 2426 → *page 18*



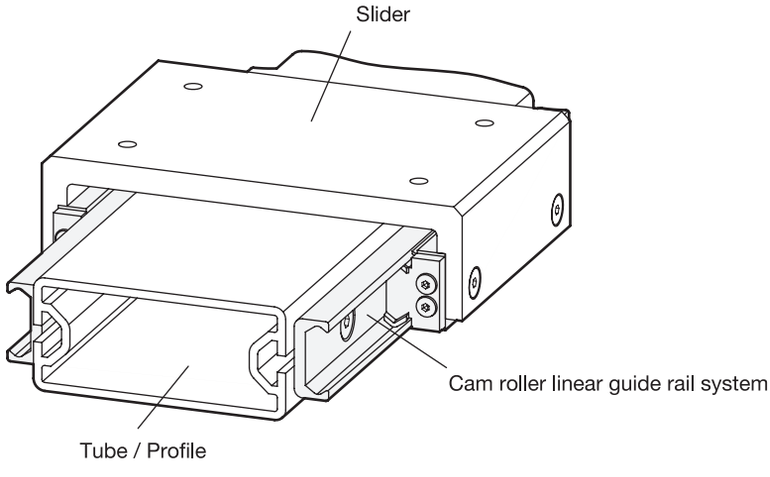
Wipers
for cam roller linear guide rails
GN 2428 → *page 19*

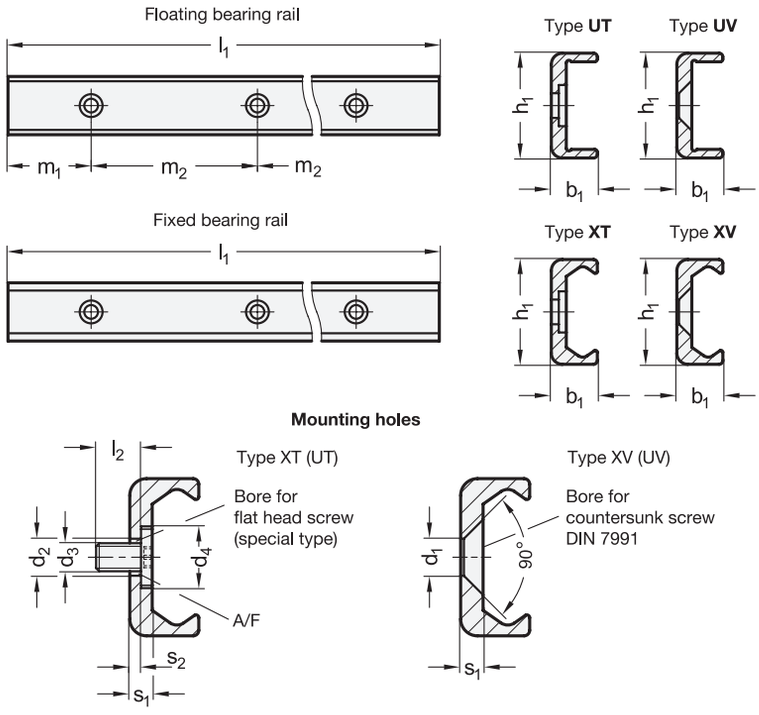


Machine unit



Linear traversal unit





Metric

4 Type

UT Floating bearing rail, with mounting hole for flat head screw
UV Floating bearing rail, with mounting hole for countersunk screw
XT Fixed bearing rail, with mounting hole for flat head screw
XV Fixed bearing rail, with mounting hole for countersunk screw

Metric table

Dimensions in: millimeters - *inches*

1 h_1	2 l_1								3 m_1	b_1	d_1	d_2	d_3 Thread	d_4	l_2	m_2	s_1	s_2	A/F
18 *0.71*	240 *9.45*	400 *15.75*	560 *22.05*	800 *31.50*	1040 *40.94*	1200 *47.24*	-		40 *1.57*	8.3 *0.33*	4.5 *0.18*	5 *0.20*	M 4	9.5 *0.37*	8 *0.31*	80 *3.15*	2.8 *0.11*	0.8 *0.03*	T20
28 *1.10*	400 *15.75*	560 *22.05*	800 *31.50*	1040 *40.94*	1200 *47.24*	1440 *56.69*	-		40 *1.57*	12.3 *0.48*	5.5 *0.22*	6.4 *0.25*	M 5	11 *0.43*	10 *0.39*	80 *3.15*	4 *0.16*	2 *0.08*	T25
35 *1.38*	400 *15.75*	560 *22.05*	800 *31.50*	1040 *40.94*	1200 *47.24*	1440 *56.69*	-		40 *1.57*	16.5 *0.65*	6.5 *0.26*	8 *0.31*	M 6	15 *0.59*	12 *0.47*	80 *3.15*	3.5 *0.14*	0.8 *0.03*	T30
43 *1.69*	400 *15.75*	560 *22.05*	800 *31.50*	1040 *40.94*	1200 *47.24*	1520 *59.84*	2000 *78.74*		40 *1.57*	21 *0.83*	8.5 *0.33*	10.5 *0.41*	M 8	18 *0.71*	16 *0.63*	80 *3.15*	4.5 *0.18*	1.5 *0.06*	T40

Specification

- Rail
  Heat-treated steel
  - Zinc plated, blue passivated finish
  - Hardened raceways, ground
- Flat head screws (for type UT / XT only)
  Steel, zinc plated, blue passivated finish
- RoHS compliant

Accessory

- Cam roller carriages GN 2424 → *page 16*
- Cam rollers GN 2426 → *page 18*

On request

- Additional rail lengths
  (up to a maximum of 141" / 3600 mm)
- Additional mounting hole distances m_1 / m_2

Information

GN 2422 cam roller linear guide rails can be combined with GN 2424 cam roller carriages or GN 2426 cam rollers to construct cam roller linear guide rail systems. These space-saving units can be used for carrying sliding doors, or in mechanical engineering or jigmaking for the linear movement of plant equipment.

The systems feature high stability and quiet running, even at high traversal speeds. Thanks to the option of combining fixed and floating bearing rails, they cause no great stress to the surrounding construction, and thus allow parallelism errors to be compensated for.

Flat head screws with extra low head are included with the rail types UT and XT.

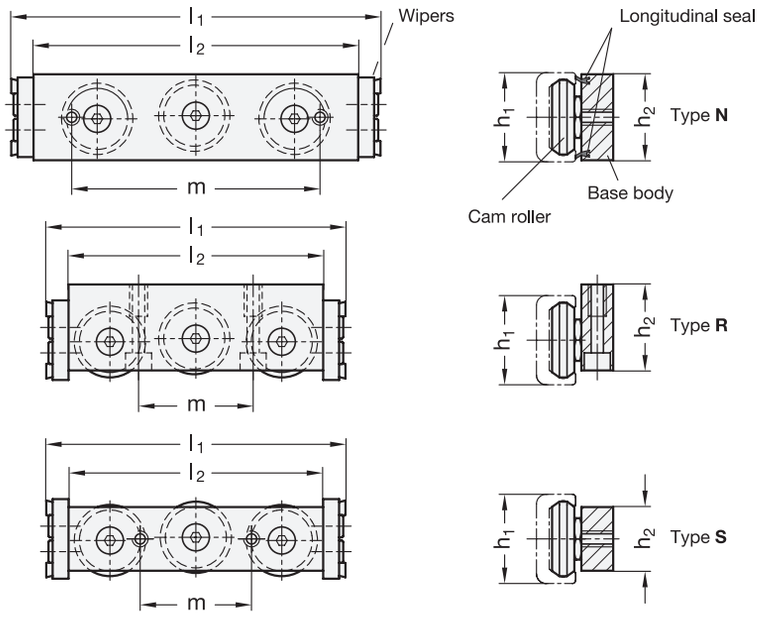
see also...

- *Structure of Cam Roller Linear Guide Rail Systems → page 12*
- *Technical Information / Load Rating of Cam Roller Linear Guide Rail Systems → starting from page 20*

How to order

1 2 3 4
GN 2422-35-1040-40-XT

1	Height h_1
2	Length l_1 of the rail
3	Mounting hole distance m_1
4	Type



Metric

2 Type

- **N** Normal cam roller carriage, central arrangement
- **R** Radial cam roller carriage, lateral arrangement
- **S** Narrow cam roller carriage, central arrangement

3 Version

- **X** With wiper for fixed bearing rail (X-rail)
- **U** With wiper for floating bearing rail (U-rail)

Metric table

Dimensions in: millimeters - *inches*

Type **N**

h_1 Rail	b_1	b_2	b_3	d_1	d_2 Thread	h_2	l_1	l_2	m	A/F
18 *0.71*	8.3 *0.33*	16.5 *0.65*	7.2 *0.28*	14 *0.55*	M 5	17 *0.67*	76 *2.99*	62 *2.44*	52 *2.05*	8
28 *1.10*	12.3 *0.48*	24.1 *0.95*	10 *0.39*	22.4 *0.88*	M 6	25 *0.98*	116 *4.57*	102 *4.02*	78 *3.07*	13
43 *1.69*	21 *0.83*	37.5 *1.48*	15 *0.59*	35 *1.38*	M 8	40 *1.57*	148 *5.83*	134 *5.28*	114 *4.49*	15

Type **S** / Type **R**

h_1 Rail	b_1	b_2 Type S	b_2 Type R	b_3 Type S	b_3 Type R	d_1	d_2 Type S	d_2 Type R	d_3 Thread	h_2 Type S	h_2 Type R	h_3	l_1	l_2	m Type S	m Type R	s	t	A/F
18 *0.71*	8.3 *0.33*	15 *0.59*	17.3 *0.68*	5.7 *0.22*	8 *0.31*	14 *0.55*	M 5	M 5	M 4	9.5 *0.37*	20 *0.79*	4 *0.16*	74 *2.91*	60 *2.36*	20 *0.79*	20 *0.79*	17 *0.67*	8 *0.31*	8
28 *1.10*	12.3 *0.48*	23.8 *0.94*	24.1 *0.95*	9.7 *0.38*	10 *0.39*	22.4 *0.88*	M 5	M 6	M 5	15 *0.59*	30 *1.18*	4 *0.16*	94 *3.70*	80 *3.15*	35 *1.38*	36 *1.42*	24.5 *0.96*	10 *0.39*	13
35 *1.38*	16.5 *0.65*	30 *1.18*	30 *1.18*	12 *0.47*	12 *0.47*	28 *1.10*	M 6	M 8	M 6	20 *0.79*	36 *1.42*	3 *0.12*	114 *4.49*	100 *3.94*	45 *1.77*	45 *1.77*	29.5 *1.16*	15 *0.59*	15
43 *1.69*	21 *0.83*	37 *1.46*	37.5 *1.48*	14.5 *0.57*	15 *0.59*	35 *1.38*	M 8	M 8	M 6	25 *0.98*	45 *1.77*	4 *0.16*	134 *5.28*	120 *4.72*	55 *2.17*	56 *2.20*	38.5 *1.52*	16 *0.63*	15

Specification

- Base body
  - Aluminum (Type N)
  - Steel (Type R / Type S)
    Zinc plated, blue passivated finish
- Cam rollers
  - Rolling bearing steel, hardened
  - Ball bearing, sealed (2RS)
  - Permanent lubrication
- Wiper
  - Plastic PUR, gray
  - Steel insert, zinc plated
- RoHS compliant

Information

GN 2424 cam roller carriages are combined with GN 2422 cam roller linear guide rails to build cam roller linear guide rail systems. They are used in mechanical engineering or jigmaking for the linear movement of plant equipment. Depending on the cam roller carriage type, these can be mounted in axial or radial direction to the roller axes. Depending on the rail type, matching wipers are mounted, with type N featuring additional sealing lips in longitudinal direction.

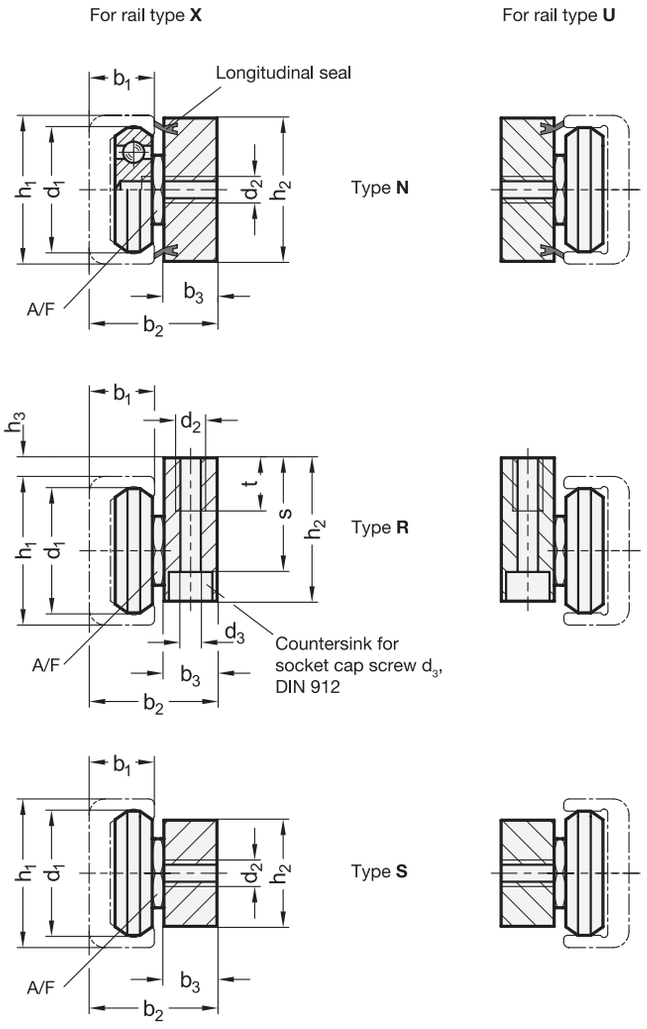
On request

- Cam roller carriages with more than 3 rollers
- Other cam roller arrangements

How to order

1 2 3
GN 2424-35-S-X

1	**Height h_1**
2	**Type**
3	**Version**



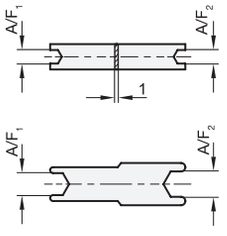
Assembly instruction

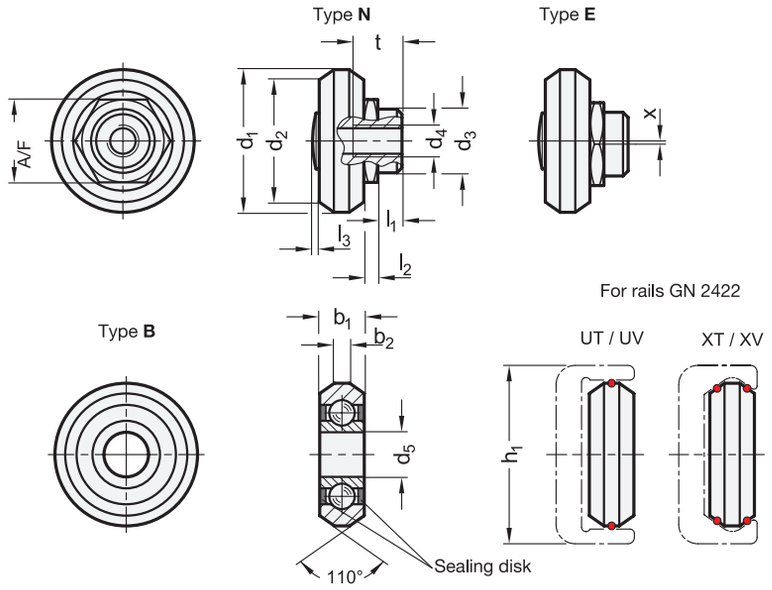
The initial tension and the clearance of the cam roller carriage in the rail can be determined during assembly. Both outer cam rollers carry the cam roller carriage, with the eccentrically adjustable middle cam roller supporting the carriage on the opposing rail side. Detailed assembly instructions and the required open-end wrench are included with every cam roller carriage.

If required, the open-end wrench may also be ordered separately under GN 2424.1, with two sizes being available:

A/F_1 / A/F_2 = 8 mm for construction size with h_1 = 18 mm, part number **GN 2424.1-8-8**

A/F_1 = 13 mm and A/F_2 = 15 mm for construction size with h_1 = 28 / 35 / 43 mm, part number **GN 2424.1-13-15**





Metric

2 Type

N Normal cam roller with centered bearing pivot
E Eccentrical cam roller with eccentrical bearing pivot
B Cam roller with bore

Metric table

Dimensions in: millimeters - *inches*

1 h_1 Rail	b_1	b_2	d_1	d_2	d_3 −0.05	d_4 Thread	d_5 −0.008	l_1	l_2	l_3 max.	A/F	t	x
18 *0.71*	4 *0.16*	1.6 *0.06*	14 *0.55*	12.4 *0.49*	6 *0.24*	M 4	5 *0.20*	1.8 *0.07*	1.5 *0.06*	0.5 *0.02*	8	5 *0.20*	0.4 *0.02*
28 *1.10*	7 *0.28*	2.4 *0.09*	22.4 *0.88*	19.2 *0.76*	10 *0.39*	M 5	7 *0.28*	3.8 *0.15*	2.2 *0.09*	0.6 *0.02*	13	8 *0.31*	0.5 *0.02*
35 *1.38*	7.5 *0.30*	3.3 *0.13*	28 *1.10*	25.1 *0.99*	12 *0.47*	M 5	8 *0.31*	4.2 *0.17*	2.5 *0.10*	0.7 *0.03*	15	9 *0.35*	0.7 *0.03*
43 *1.69*	11 *0.43*	5 *0.20*	35 *1.38*	30.8 *1.21*	12 *0.47*	M 6	10 *0.39*	4.3 *0.17*	2.5 *0.10*	0.7 *0.03*	15	11 *0.43*	0.8 *0.03*

Specification

3

- Cam roller
  - Rolling bearing steel, hardened
  - Dust and splash water protected (2RS)
  - Permanent lubrication
- Sealing disks
  Plastic (NBR) **2RS**
- Bearing pivot
  Steel, zinc plated, blue passivated finish
- RoHS compliant

On request

- Sealing disks, sheet metal with gap seal (2Z)

Information

GN 2426 cam rollers are combined with GN 2422 cam roller linear guide rails to build individual and space-saving cam roller linear guide rail systems.

The outer surfaces of the cam rollers are slightly convex, so that in conjunction with the correspondingly-shaped fixed bearing rails (type XT or XV) there is an accurate and linear run across four contact points. The same applies to floating bearing rails (type UT or UV), but with only two contact points.

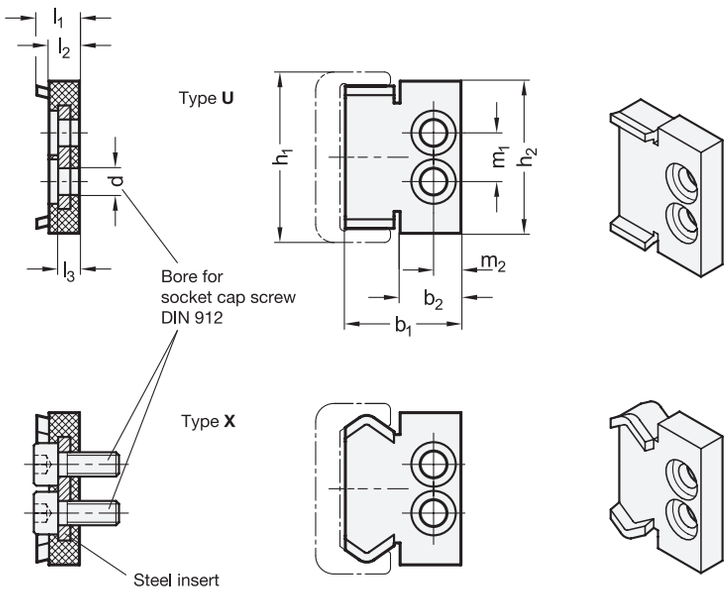
Combined with the rail, clearance freedom or the initial tension of several cam rollers can be determined during assembly by using the eccentrically adjustable cam roller (type E). The required open-end wrench is available separately under GN 2424.1.

The sealed and permanently lubricated cam rollers guarantee a superior running performance.

see also...
- *Structure of Cam Roller Linear Guide Rail Systems → page 12*
- *Cam Roller Linear Guide Rails GN 2422 → page 15*
- *Technical Information / Load Rating of Cam Roller Linear Guide Rail Systems → starting from page 20*

How to order
1 2 3
GN 2426-35-N-2RS

1	Height h_1
2	Type
3	Material of the sealing disks



Metric

2 Type

U For floating bearing rails
X For fixed bearing rails

Metric table

Dimensions in: millimeters - *inches*

h_1 Rail	**b_1**	**b_2**	**d** For socket cap screw DIN 912	**h_2**	**l_1**	**l_2**	**l_3** max.	**m_1**	**m_2**
18 *0.71*	12.6 *0.50*	5.6 *0.22*	M 3	17 *0.67*	7 *0.28*	5 *0.20*	3.5 *0.14*	-	3.5 *0.14*
28 *1.10*	19 *0.75*	10 *0.39*	M 4	25 *0.98*	7 *0.28*	5 *0.20*	3.5 *0.14*	8 *0.31*	4.5 *0.18*
35 *1.38*	25.5 *1.00*	12.5 *0.49*	M 4	32 *1.26*	7 *0.28*	5 *0.20*	3.5 *0.14*	10 *0.39*	5.5 *0.22*
43 *1.69*	32.2 *1.27*	15 *0.59*	M 4	40 *1.57*	7 *0.28*	5 *0.20*	3.5 *0.14*	12 *0.47*	7.5 *0.30*

Specification

- Wiper
  Plastic PUR, gray
- Bracing core
  Steel, zinc plated
- Socket cap screws DIN 912
  Steel, zinc plated, blue passivated finish
- RoHS compliant

Information

GN 2428 wipers protect against dirt deposits on rails and rollers.

For size h_1 = 18 mm, the wiper is mounted with only one central screw.

Screws are included.

see also...
- *Cam Roller Linear Guide Rails GN 2422 → page 15*
- *Cam Roller Carriages GN 2424 → page 16*

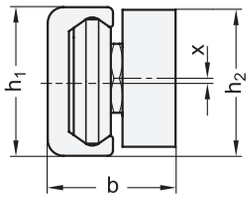
How to order		
GN 2428-35-X (1 2)	1	**Height h_1**
	2	**Type**

Tolerance for mounted cam roller linear guide rail systems

The following dimensions / tolerances result from the combination of GN 2422 cam roller linear guide rails and GN 2424 cam roller carriages.

If several cam roller carriages are installed into one rail, an offset x can occur between the cam roller carriages, which must be added to the dimension h_2.

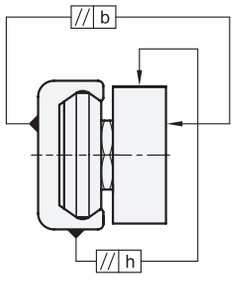
Dimensions in: millimeters - *inches*

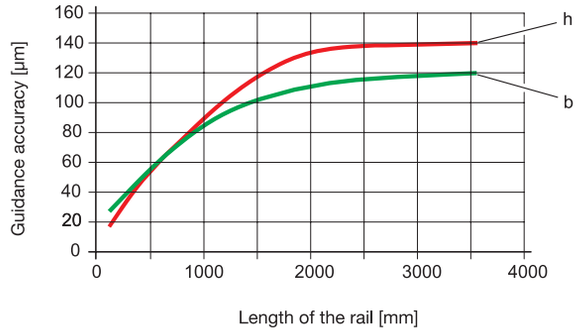


h_1	b	h_2	x
18 $^{+0.25}_{-0.10}$ *0.71* $^{+0.009}_{-0.004}$	$^{+0.15}_{-0.16}$ $^{+0.006}_{-0.006}$	$^{+0.25}_{-0.25}$ $^{+0.009}_{-0.009}$	±0.20 *±0.008*
28 $^{+0.25}_{-0.10}$ *1.10* $^{+0.009}_{-0.004}$	$^{+0.25}_{-0.10}$ $^{+0.009}_{-0.004}$	$^{+0.15}_{-0.35}$ $^{+0.006}_{-0.014}$	±0.20 *±0.008*
35 $^{+0.35}_{-0.10}$ *1.38* $^{+0.014}_{-0.004}$	$^{+0.25}_{-0.10}$ $^{+0.009}_{-0.004}$	$^{+0.10}_{-0.30}$ $^{+0.004}_{-0.012}$	±0.20 *±0.008*
43 $^{+0.36}_{-0.10}$ *1.69* $^{+0.014}_{-0.004}$	$^{+0.25}_{-0.10}$ $^{+0.009}_{-0.004}$	$^{+0.20}_{-0.35}$ $^{+0.008}_{-0.014}$	±0.20 *±0.008*

Guidance accuracy

Cam roller linear guide rail systems feature the linear guidance accuracy shown in the diagram.





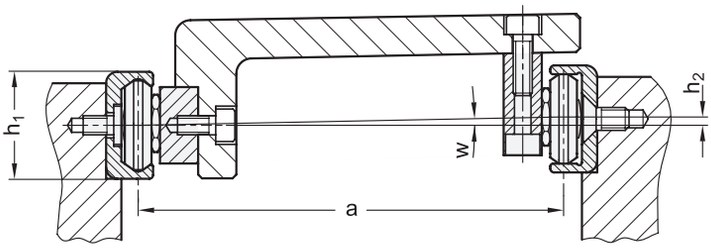
Permissible height offset

The fixed and floating bearing principle ensures that misalignments in the base construction are compensated. However, certain limit values should not be exceeded when using type UV / UT and XV / XT rails. The following table shows the maximum permissible angle of the height offset of the fixed and floating bearing rails. Please note that the load rating is reduced by 30% once the specified values are reached.

To calculate h_2, the following equation should be used: $h_2 = a \times \tan w$, using the below table values for w.

Example: h_1 = 43 mm, a = 650 mm, w max. = 0.171°

h_2 = 650 mm x tan 0.171° = 1.94 mm



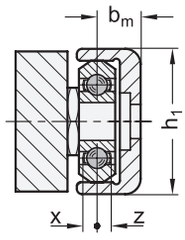
Dimensions in: millimeters - *inches*

h_1	w max.
18 *0.71*	0.057°
28 *1.10*	0.143°
35 *1.38*	0.151°
43 *1.69*	0.171°

Permissible lateral offset

It is possible to compensate for angular errors and the offset of the mounting surface with the help of fixed and floating bearing rails. The permissible offset of cam rollers and cam roller carriages in the type UT / UV rails is given by the values for x and z. The reference is the nominal middle of the raceway b_m.

A parallelism or angular error can thus be compensated for across the whole length of the rail, which corresponds to an offset from the sum of the values for x and z.

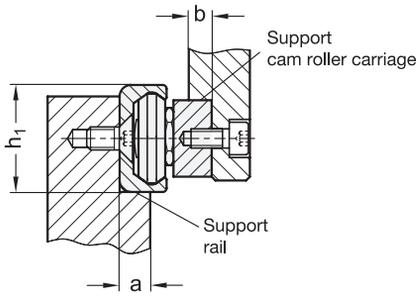


Dimensions in: millimeters - *inches*

h_1	b_m	x	z
18 *0.71*	6.3 *0.25*	1.1 *0.04*	0.3 *0.01*
28 *1.10*	8.6 *0.34*	1.3 *0.05*	0.7 *0.03*
35 *1.38*	10.5 *0.41*	2.7 *0.11*	1.3 *0.05*
43 *1.69*	14.5 *0.57*	2.5 *0.10*	1.5 *0.06*

Support widths

To guarantee the proper running motion, outside connecting dimensions must be observed during the assembly of cam roller linear guide rail systems. Suitable components include supports at the rail and at the cam roller carriage, which should not be smaller than the widths a or b. In addition, forces acting from the outside can thus be transferred reliably from the cam roller linear guide rail system without submitting the mounting screws to shear stress.



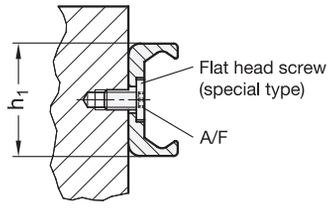
Dimensions in: millimeters - *inches*

h_1	a	b
18 *0.71*	5 *0.20*	4 *0.16*
28 *1.10*	8 *0.31*	4 *0.16*
35 *1.38*	11 *0.43*	5 *0.20*
43 *1.69*	14 *0.55*	5 *0.20*

Tightening torques

When positioning the type UT and XT rails with cylindrical countersunk holes, make sure that the mounting holes of the mounting surface are tapped deep enough.

The specified tightening torque of the flat head screws must be maintained.



Dimensions in: millimeters - *inches*

h_1	Screw	A/F Drive	Tightening torque in Nm
18 *0.71*	M 4 x 8	T20	3
28 *1.10*	M 5 x 10	T25	9
35 *1.38*	M 6 x 12	T30	14
43 *1.69*	M 8 x 16	T40	24

Traversal speed

Depending on the application and installation length, the maximum traversal speed of cam roller linear guide rail systems is 7 m/s.

Lubrication

Once the cam roller carriage has been placed in the rail, it is recommended to slightly grease the raceway surfaces of the rail with a high-performance lubricant for linear guide rail systems, such as Klüberplex BE 31-222, using a brush.

The lubricant film should be checked at regular intervals for any dirt or pollution, e.g. by chips.

If the lubricant is visibly soiled or discolored, use a clean rag to clean the rail and the rollers and apply new lubricant.

Applying new lubricant is normally necessary once a year or after 100 km of running distance.

Operating temperatures

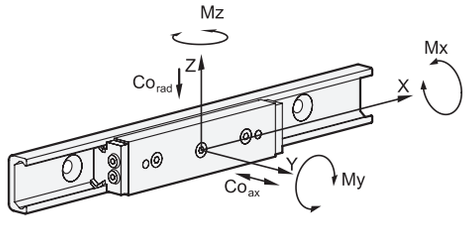
The components of the cam roller linear guide rail systems are suitable for use in a temperature range of -22 °F to +266 °F (-30 °C to +130 °C).

Load rating

The available installation space, the desired mounting method and the load to be carried are the determining factors when selecting the suitable cam roller linear guide rail system. The values listed below can be used as a guidance in selecting a suitable cam roller carriage or cam rollers.

The load rating details are non-binding guide values given without liability and do not constitute a guarantee of quality. The user must determine in each individual case whether a product is suitable for the intended application. Environmental factors and aging may affect the stated values.

Part number	Load ratings in main load direction		Permissible load torques		
	Co_{rad}	Co_{ax}	M_x	M_y	M_z
GN 2424 -18-...	825 N *185 lbf*	260 N *58 lbf*	1.6 Nm	8.3 Nm	4.8 Nm
-28-...	2210 N *497 lbf*	650 N *146 lbf*	6.4 Nm	28 Nm	16.4 Nm
-35-...	3550 N *798 lbf*	1070 N *241 lbf*	13.2 Nm	63 Nm	34.1 Nm
-43-...	5520 N *1241 lbf*	1580 N *355 lbf*	23.7 Nm	104.7 Nm	60.1 Nm
GN 2426 -18-...	410 N *92 lbf*	-	-	-	-
-28-...	1100 N *247 lbf*	-	-	-	-
-35-...	1760 N *396 lbf*	-	-	-	-
-43-...	2700 N *607 lbf*	-	-	-	-



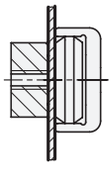
Cam roller linear guide rail systems consist of a GN 2422 cam roller linear guide rail and a GN 2424 cam roller carriage. All components are supplied separately packed and unassembled. When delivered, the play between cam roller carriage and rail is not preset.

During assembly, set the cam roller carriage as follows:

1. Make sure that the raceways and the cam rollers are clean.

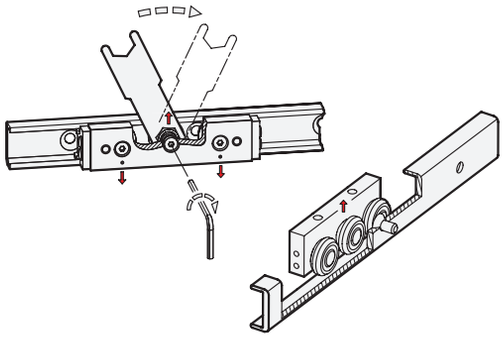
2. Slightly loosen the mounting screw of the central, eccentrically adjustable cam roller and insert the cam roller carriage (without the wipers supplied) into the rail (see also items 4 and 6).

3. Position the cam roller carriage at one end of the rail. For the floating bearing rails of type UT and UV, a thin and stable support (e.g. open-end wrench or a feeler gauge) must be placed underneath the ends of the cam roller carriage body and the rail to ensure the parallel alignment of the cam roller carriage in the level raceways.



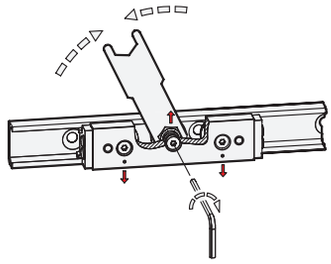
Use support for floating bearing rails!

4. Insert the GN 2424.1 open-end wrench (included) between the eccentrical cam roller and the cam roller carriage body. (The centering bores to the left and right mark the position of the running side of the concentric / load-bearing cam rollers)



5. Turning the open-end wrench clockwise will press the cam roller to be adjusted against the top raceway, which will set the cam roller carriage free of play. Excessive pre-tensioning is to be avoided because this will increase friction and reduce the service life.

6. While using the open-end wrench to hold the bearing pivot in the correct position, the mounting screw may be moderately tightened. The correct tightening torque will be checked later.



7. Move the cam roller carriage in the rail and make sure that the play / the moderate pre-tensioning is constant along the full length of the rail. The running motion should be smooth, with the cam roller carriage having no play or jamming at any point inside the rail.

8. Now tighten the mounting screw with the prescribed tightening torque shown in the table, with the open-end wrench holding the angular position of the cam rollers in place.

Dimensions in: millimeters - ***inches***

h_1	**Tightening torque** in Nm
18 *0.71*	3
28 *1.10*	7
35 *1.38*	7
43 *1.69*	12

9. Now mount the wipers, and for cam rollers carriage type N also the longitudinal seal. To do so, remove the cam roller carriage from the rail.

10. Before reinserting the cam roller carriage, make sure that the raceways / cam rollers are properly lubricated using a high-performance lubricant for linear guide rail systems.

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