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Telescopic linear slides
Linear guide rail systems

Standard Machine Elements Worldwide

Telescopic linear slides
Linear guide rail systems

Linear slides
Structure

All linear slides consist of an outer rail with a runner moving inside. Anti-friction bearings, kept at a distance and in position by means of a ball cage, lie between the rail and the runner.

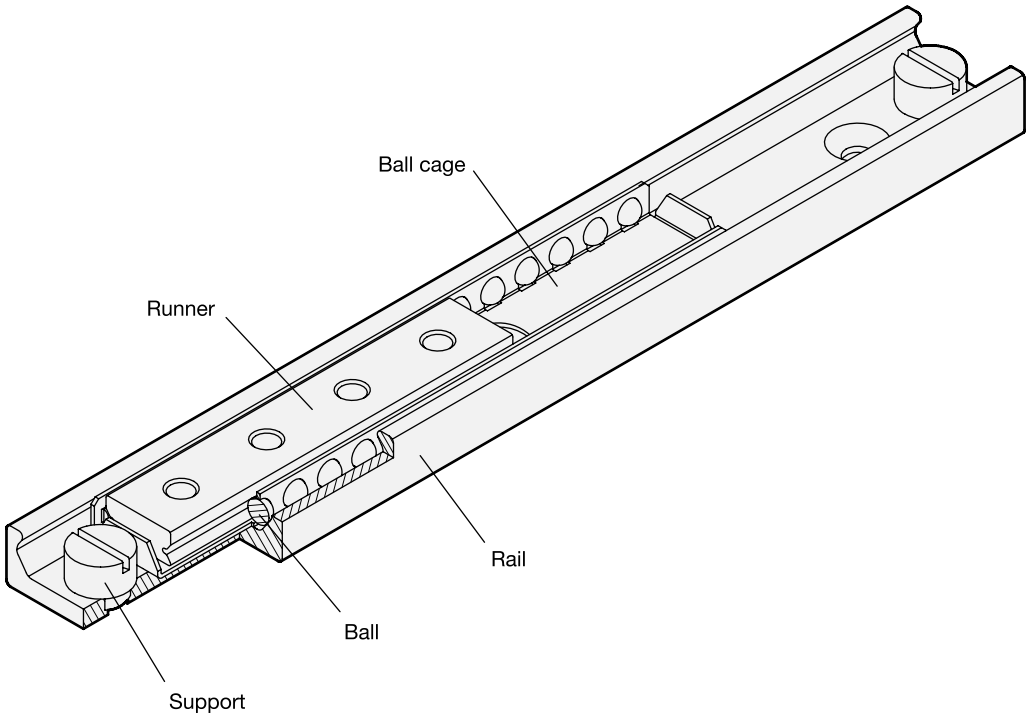
Rail and runner are made of heat treatable steel, enabling their use in industrial environments with higher requirements in terms of load rating, quiet operation and useful service life.

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 so that a clearance-free (i.e. moderately pre-stressed) match-up is created between rail and runner. The raceways of the rails and runners are induction hardened, which combined with the antifriction bearings results in lower wear and longer service life. Linear slides are permanently lubricated with a high-grade special grease designed for linear guide rail systems.

Depending on requirements, a variety of different types are available. Sliding distances of the runners are 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 intermediate profile.

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

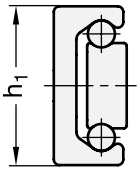


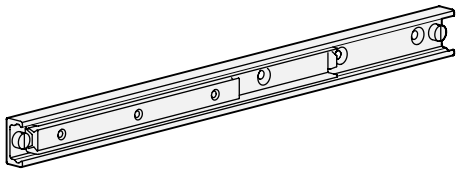
Linear slides

Types

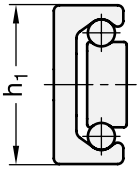
4

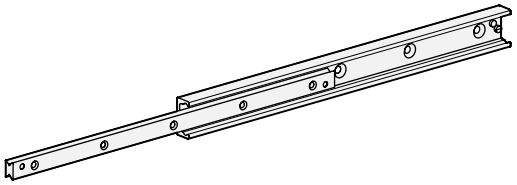
Linear slides
with no extension
GN 2402 / Page 6



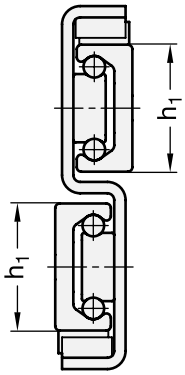


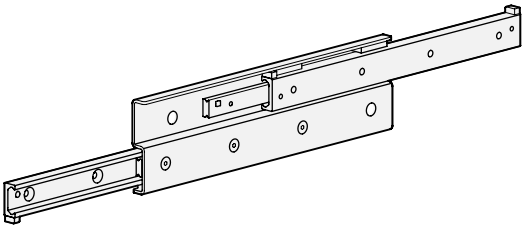
Telescopic linear slides
with partial extension
GN 2404 / Page 8



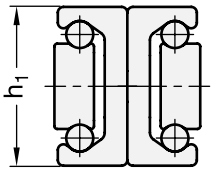


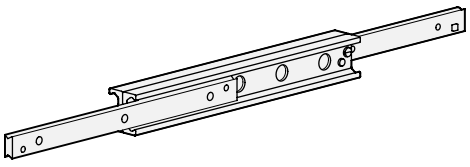
Telescopic linear slides
S-Shaped,
with one side extension
GN 2406 / Page 10



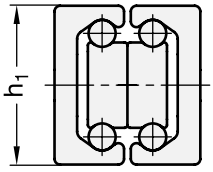


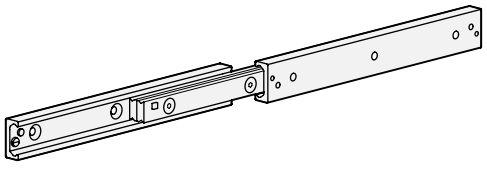
Telescopic linear slides
H-Shaped rail,
with full extension
GN 2408 / Page 11





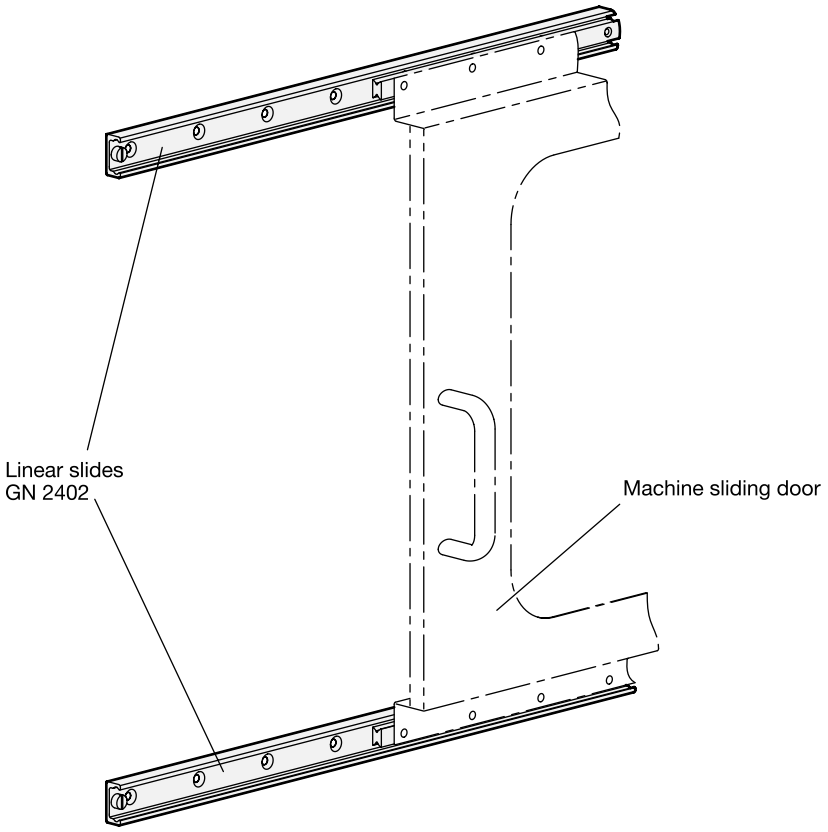
Telescopic linear slides
dual configuration,
with full extension
GN 2410 / Page 13

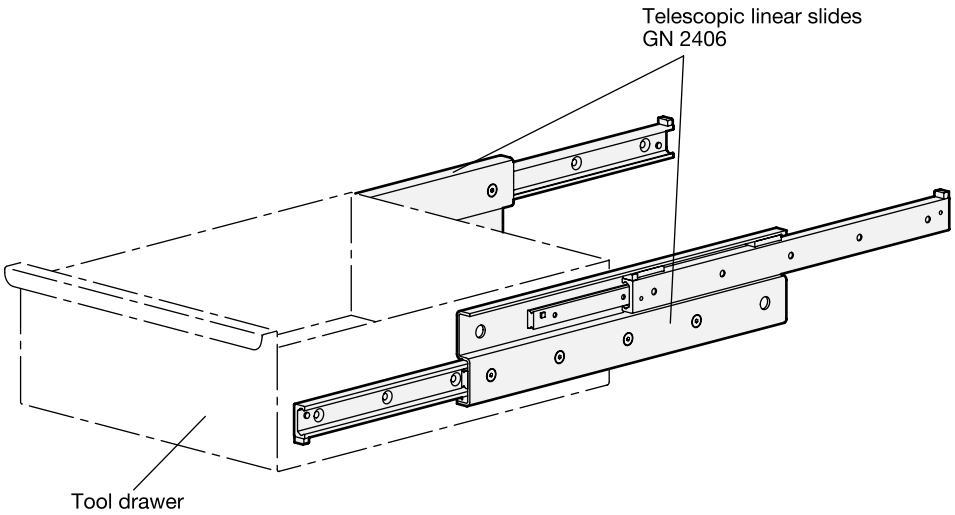




Linear slides / Telescopic linear slides

Assembly examples





GN 2402

Linear slides

Specification
Rail / Runner
Heat treatable steel
- zinc plated, blus passivated
- Raceways hardened

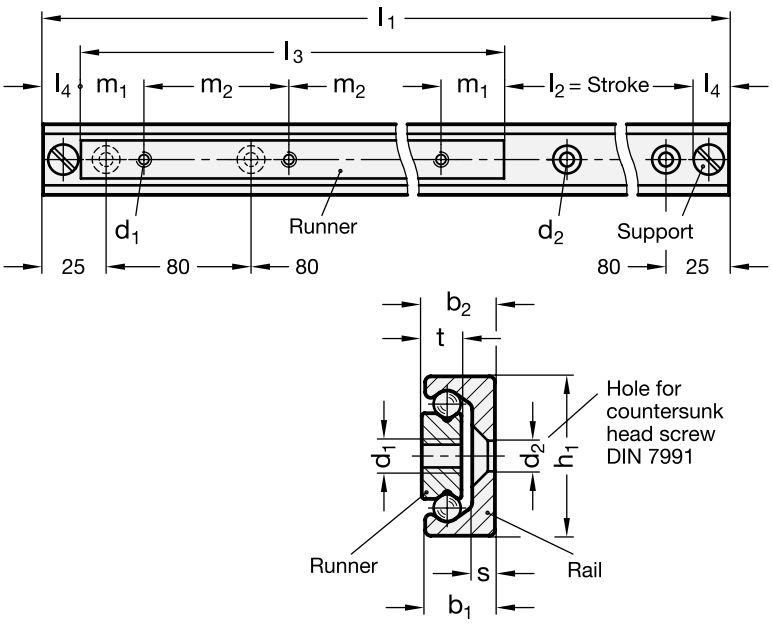
Balls
Anti-friction bearing steel, hardened

Ball cage
Steel, zinc plated

Information
Linear slides GN 2402 with no extension are also known as linear motion bearings. They are used, for example, for storage drawers and sliding doors, or in jigmaking for a sliding motion in a linear direction.

The sliding distance of the runner lies within the length of the rail l_1. External elements should limit the maximum sliding distance; the supports of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

On request
- other lengths (based on the standard lengths grid dimension of 80 mm)
- Special lengths (bore, start and end distances)
- more than one runner, special cages



Standard Elements	Main dimensions												⚖
Description	h_1	l_3	l_1 - l_2	b_1	b_2	d_1	d_2	l_4 max.	m_1	m_2	s	t	g
GN 2402-28-60-130	28	60	130 - 34	12.3	12.9	M 5	5.5	18	10	20	4	7	228
GN 2402-28-60-210	28	60	210 - 114	12.3	12.9	M 5	5.5	18	10	20	4	7	336
GN 2402-28-60-370	28	60	370 - 274	12.3	12.9	M 5	5.5	18	10	20	4	7	540
GN 2402-28-80-290	28	80	290 - 174	12.3	12.9	M 5	5.5	18	10	20	4	7	420
GN 2402-28-80-450	28	80	450 - 334	12.3	12.9	M 5	5.5	18	10	20	4	7	672
GN 2402-28-80-610	28	80	610 - 494	12.3	12.9	M 5	5.5	18	10	20	4	7	890
GN 2402-28-130-290	28	130	290 - 124	12.3	12.9	M 5	5.5	18	25	80	4	7	504
GN 2402-28-130-450	28	130	450 - 284	12.3	12.9	M 5	5.5	18	25	80	4	7	720
GN 2402-28-130-690	28	130	690 - 524	12.3	12.9	M 5	5.5	18	25	80	4	7	1032
GN 2402-28-210-450	28	210	450 - 204	12.3	12.9	M 5	5.5	18	25	80	4	7	792
GN 2402-28-210-610	28	210	610 - 364	12.3	12.9	M 5	5.5	18	25	80	4	7	996
GN 2402-28-210-1010	28	210	1010 - 764	12.3	12.9	M 5	5.5	18	25	80	4	7	1536
GN 2402-35-130-290	35	130	290 - 114	16.5	17	M 6	6.5	23	25	80	3.5	10	847
GN 2402-35-130-450	35	130	450 - 274	16.5	17	M 6	6.5	23	25	80	3.5	10	1135
GN 2402-35-130-770	35	130	770 - 594	16.5	17	M 6	6.5	23	25	80	3.5	10	1711
GN 2402-35-210-450	35	210	450 - 194	16.5	17	M 6	6.5	23	25	80	3.5	10	1335
GN 2402-35-210-690	35	210	690 - 434	16.5	17	M 6	6.5	23	25	80	3.5	10	1767
GN 2402-35-210-1010	35	210	1010 - 754	16.5	17	M 6	6.5	23	25	80	3.5	10	2343
GN 2402-35-290-610	35	290	610 - 274	16.5	17	M 6	6.5	23	25	80	3.5	10	1823
GN 2402-35-290-930	35	290	930 - 594	16.5	17	M 6	6.5	23	25	80	3.5	10	2399
GN 2402-35-290-1330	35	290	1330 - 994	16.5	17	M 6	6.5	23	25	80	3.5	10	3119
GN 2402-43-210-450	43	210	450 - 194	21	22	M 8	8.5	23	25	80	4.5	13.5	2004
GN 2402-43-210-690	43	210	690 - 434	21	22	M 8	8.5	23	25	80	4.5	13.5	2772
GN 2402-43-210-1010	43	210	1010 - 754	21	22	M 8	8.5	23	25	80	4.5	13.5	3816
GN 2402-43-370-770	43	370	770 - 354	21	22	M 8	8.5	23	25	80	4.5	13.5	3456
GN 2402-43-370-1010	43	370	1010 - 594	21	22	M 8	8.5	23	25	80	4.5	13.5	4236
GN 2402-43-370-1490	43	370	1490 - 1074	21	22	M 8	8.5	23	25	80	4.5	13.5	5796

GN 2404

Telescopic linear slides

Specification
Rail / Runner
Heat treatable steel
- zinc plated, blue passivated
- Raceways hardened

Balls
Anti-friction bearing steel, hardened

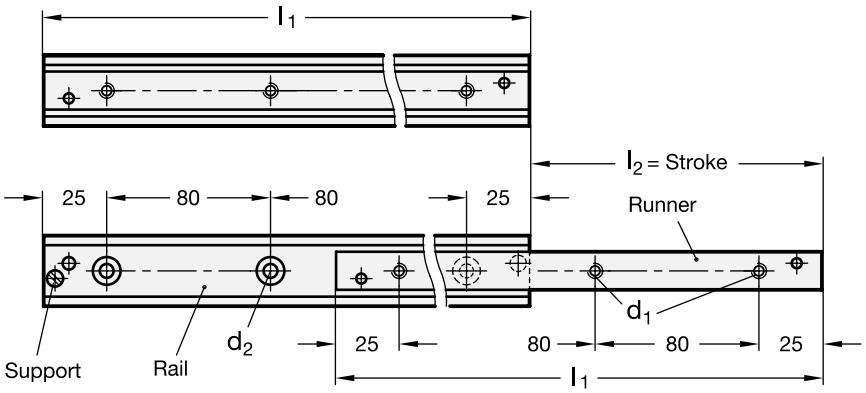
Ball cage
Steel, zinc plated

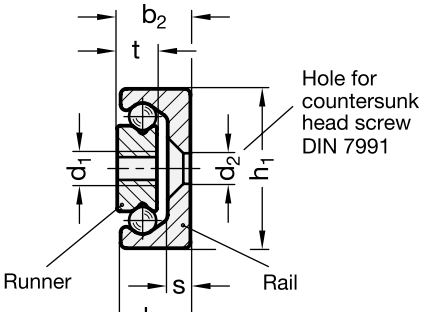
Information
Telescopic linear slides GN 2404 with partial extension are used, for example, for storage drawers and sliding doors, or in jigmaking for a sliding motion in a linear direction.

If the support screw is removed on both sides, the sliding distance extends the length of the rail plus an additional distance of slightly more than half the length of the rail.

External elements should limit the maximum sliding distance; the supports of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

On request
- other lengths (based on the standard lengths grid dimension of 80 mm)
- Special lenghts (bore, start and end distances)





Standard Elements	Main dimensions								⚖
Description	h_1	l_1 - l_2	b_1	b_2	d_1	d_2	s	t	g
GN 2404-28-130	28	130 - 74	12.3	12.9	M 5	5.5	4	7	290
GN 2404-28-210	28	210 - 116	12.3	12.9	M 5	5.5	4	7	460
GN 2404-28-290	28	290 - 148	12.3	12.9	M 5	5.5	4	7	640
GN 2404-28-370	28	370 - 190	12.3	12.9	M 5	5.5	4	7	810
GN 2404-28-450	28	450 - 232	12.3	12.9	M 5	5.5	4	7	990
GN 2404-28-530	28	530 - 274	12.3	12.9	M 5	5.5	4	7	1170
GN 2404-35-290	35	290 - 159	16.5	17	M 6	6.5	3.5	10	1170
GN 2404-35-370	35	370 - 203	16.5	17	M 6	6.5	3.5	10	1210
GN 2404-35-450	35	450 - 247	16.5	17	M 6	6.5	3.5	10	1350
GN 2404-35-530	35	530 - 279	16.5	17	M 6	6.5	3.5	10	1590
GN 2404-35-610	35	610 - 323	16.5	17	M 6	6.5	3.5	10	1830
GN 2404-35-690	35	690 - 367	16.5	17	M 6	6.5	3.5	10	2070
GN 2404-43-370	43	370 - 208	21	22	M 8	8.5	4.5	13.5	1920
GN 2404-43-450	43	450 - 243	21	22	M 8	8.5	4.5	13.5	2340
GN 2404-43-530	43	530 - 278	21	22	M 8	8.5	4.5	13.5	2760
GN 2404-43-610	43	610 - 313	21	22	M 8	8.5	4.5	13.5	3170
GN 2404-43-690	43	690 - 363	21	22	M 8	8.5	4.5	13.5	3590
GN 2404-43-770	43	770 - 398	21	22	M 8	8.5	4.5	13.5	3790

GN 2406

Telescopic linear slides

Specification
Type **E**: with one side extension
Rail / Runner

Heat treatable steel
- zinc plated, blue passivated
- Raceways hardened

Balls
Anti-friction bearing steel, hardened

Ball cage
Steel, zinc plated

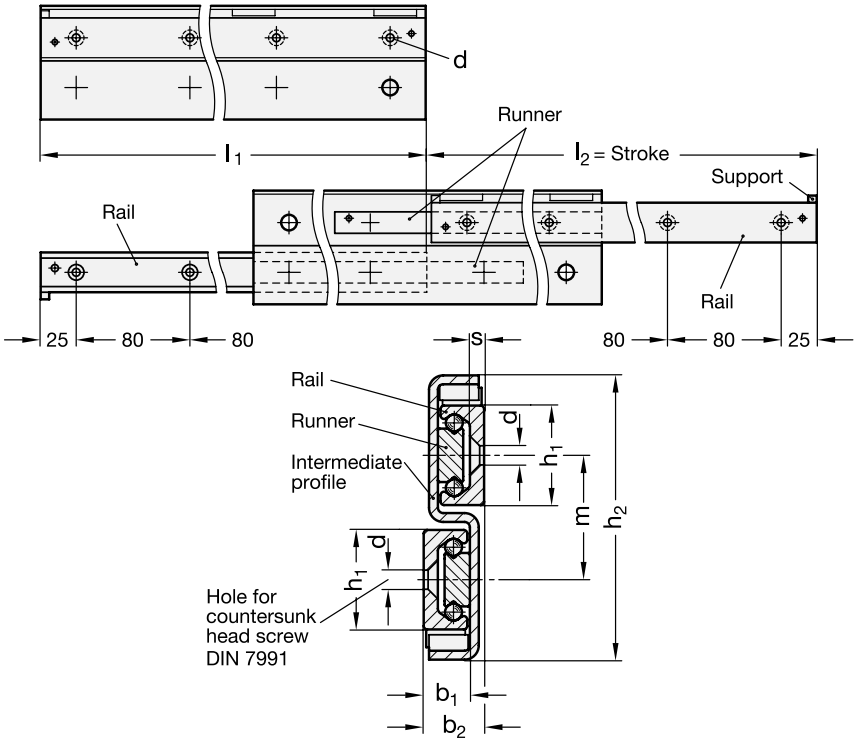
Indermediate metal sheet of the ball cage
Steel, zinc plated

Information
Telescopic linear slides GN 2406, S-shaped, with one side extension consist of two slides linked by an intermediate profile. They are used when the lateral space requires a small width, and when large extension is required. 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 so that an extension is reached which is longer than the base length l_1.

External elements should limit the maximum sliding distance; the supports of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

On request
- other lengths (based on the standard lengths grid dimension of 80 mm)
- Special lenghts (bore, start and end distances)
- Extensions on both side of each rail (Type D)



Standard Elements	Main dimensions								⚖
Description	h_1	l_1 - l_2	b_1	b_2	d	h_2	m	s	g
GN 2406-28-290-E	28	290 - 296	12.3	17	5.5	80	35	4	1890
GN 2406-28-370-E	28	370 - 380	12.3	17	5.5	80	35	4	2410
GN 2406-28-450-E	28	450 - 464	12.3	17	5.5	80	35	4	2930
GN 2406-28-530-E	28	530 - 548	12.3	17	5.5	80	35	4	3450
GN 2406-28-610-E	28	610 - 630	12.3	17	5.5	80	35	4	3970
GN 2406-35-450-E	35	450 - 494	16.5	22.5	6.5	97	43	3.5	4000
GN 2406-35-530-E	35	530 - 558	16.5	22.5	6.5	97	43	3.5	4710
GN 2406-35-690-E	35	690 - 734	16.5	22.5	6.5	97	43	3.5	5990
GN 2406-35-850-E	35	850 - 886	16.5	22.5	6.5	97	43	3.5	7450
GN 2406-43-530-E	43	530 - 556	21	28	8.5	117	52	4.5	7740
GN 2406-43-690-E	43	690 - 726	21	28	8.5	117	52	4.5	10070
GN 2406-43-850-E	43	850 - 866	21	28	8.5	117	52	4.5	12410
GN 2406-43-1010-E	43	1010 - 1036	21	28	8.5	117	52	4.5	14750
GN 2406-43-1490-E	43	1490 - 1516	21	28	8.5	117	52	4.5	21750

GN 2408

Telescopic linear slides

Specification
Types
- Type **GG**: Runner with thread, on both sides
- Type **DG**: Runner 1x with countersink and 1 x with thread
- Type **DD**: Runner with countersink, on both sides

Rail / Runner
Heat treatable steel
- zinc plated, blue passivated
- Raceways hardened

Balls
Anti-friction bearing steel, hardened

Ball cage
Steel, zinc plated, blue passivated

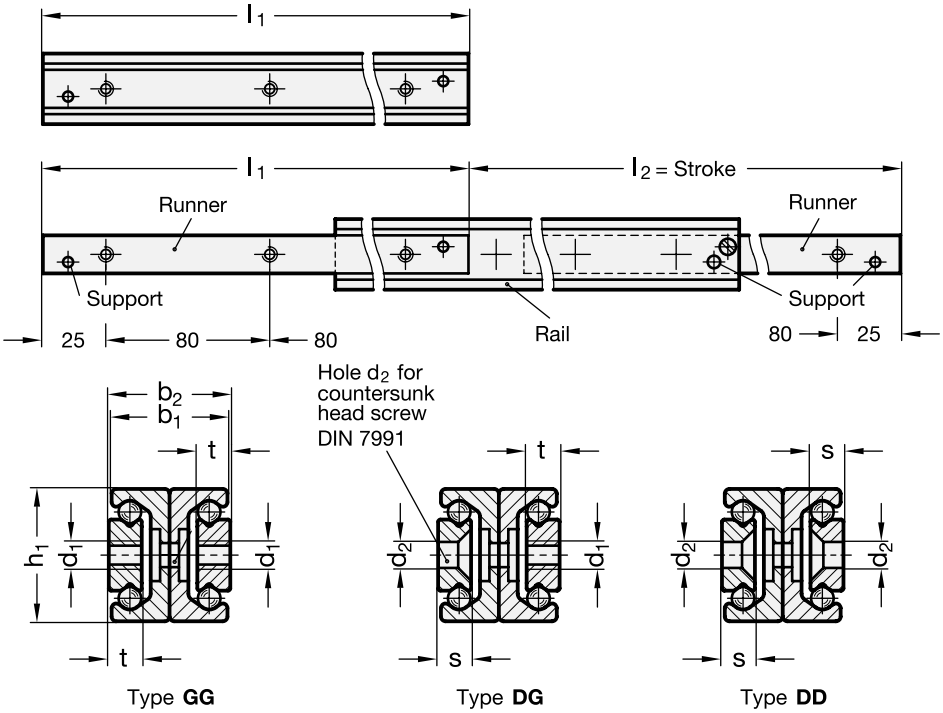
Rail Connection
- Blank rivets, Stainless Steel (h_1 = 28 and 35)
- Screws, Steel zinc plated (h_1 = 43)

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

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

External elements should limit the maximum sliding distance; the supports of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

On request
- other lengths (based on the standard lengths grid dimensions of 80 mm)
- Special lengths (bore, stard and end distances)



Standard Elements	Main dimensions								⚖
Description	h_1	l_1 - l_2	b_1	b_2	d_1	d_2	s	t	g
GN 2408-28-210-GG	28	210 - 232	24.6	25.8	M 5	-	-	7	920
GN 2408-28-370-GG	28	370 - 380	24.6	25.8	M 5	-	-	7	1630
GN 2408-28-450-GG	28	450 - 464	24.6	25.8	M 5	-	-	7	1980
GN 2408-28-530-GG	28	530 - 548	24.6	25.8	M 5	-	-	7	2330
GN 2408-35-370-GG	35	370 - 406	33	34	M 6	-	-	10	2260
GN 2408-35-450-GG	35	450 - 494	33	34	M 6	-	-	10	2750
GN 2408-35-530-GG	35	530 - 558	33	34	M 6	-	-	10	3220
GN 2408-35-610-GG	35	610 - 464	33	34	M 6	-	-	10	3720
GN 2408-43-450-GG	43	450 - 486	42	44	M 8	-	-	13.5	4730
GN 2408-43-610-GG	43	610 - 626	42	44	M 8	-	-	13.5	6410
GN 2408-43-770-GG	43	770 - 796	42	44	M 8	-	-	13.5	8090
GN 2408-43-930-GG	43	930 - 966	42	44	M 8	-	-	13.5	9770
GN 2408-28-210-DG	28	210 - 232	24.6	25.8	M 5	5.5	4	-	920
GN 2408-28-370-DG	28	370 - 380	24.6	25.8	M 5	5.5	4	-	1630
GN 2408-28-450-DG	28	450 - 464	24.6	25.8	M 5	5.5	4	-	1980
GN 2408-28-530-DG	28	530 - 548	24.6	25.8	M 5	5.5	4	-	2330
GN 2408-35-370-DG	35	370 - 406	33	34	M 6	6.5	3.5	-	2260
GN 2408-35-450-DG	35	450 - 494	33	34	M 6	6.5	3.5	-	2750
GN 2408-35-530-DG	35	530 - 558	33	34	M 6	6.5	3.5	-	3220
GN 2408-35-610-DG	35	610 - 646	33	34	M 6	6.5	3.5	-	3720
GN 2408-43-450-DG	43	450 - 486	42	44	M 8	8.5	4.5	-	4730
GN 2408-43-610-DG	43	610 - 626	42	44	M 8	8.5	4.5	-	6410
GN 2408-43-770-DG	43	770 - 796	42	44	M 8	8.5	4.5	-	8090
GN 2408-43-930-DG	43	930 - 966	42	44	M 8	8.5	4.5	-	9770
GN 2408-28-210-DD	28	210 - 232	24.6	25.8	-	5.5	4	-	920
GN 2408-28-370-DD	28	370 - 380	224.6	25.8	-	5.5	4	-	1630
GN 2408-28-450-DD	28	450 - 464	24.6	25.8	-	5.5	4	-	1980
GN 2408-28-530-DD	28	530 - 548	24.6	25.8	-	5.5	4	-	2330
GN 2408-35-370-DD	35	370 - 406	33	34	-	6.5	3.5	-	2260
GN 2408-35-450-DD	35	450 - 494	33	34	-	6.5	3.5	-	2750
GN 2408-35-530-DD	35	530 - 558	33	34	-	6.5	3.5	-	3220
GN 2408-35-610-DD	35	610 - 646	33	34	-	6.5	3.5	-	3720
GN 2408-43-450-DD	43	450 - 486	42	44	-	8.5	4.5	-	4730
GN 2408-43-610-DD	43	610 - 626	42	44	-	8.5	4.5	-	6410
GN 2408-43-770-DD	43	770 - 796	42	44	-	8.5	4.5	-	8090
GN 2408-43-930-DD	43	930 - 966	42	44	-	8.5	4.5	-	9770

GN 2410

Telescopic linear slides

Specification
Rail / Runner
Heat treatable steel
- zinc plated, blue passivated
- Raceways hardened

Balls
Anti-friction bearing steel, hardened

Ball cage
Steel, zinc plated

Rail connection
Screw
Steel, zinc plated

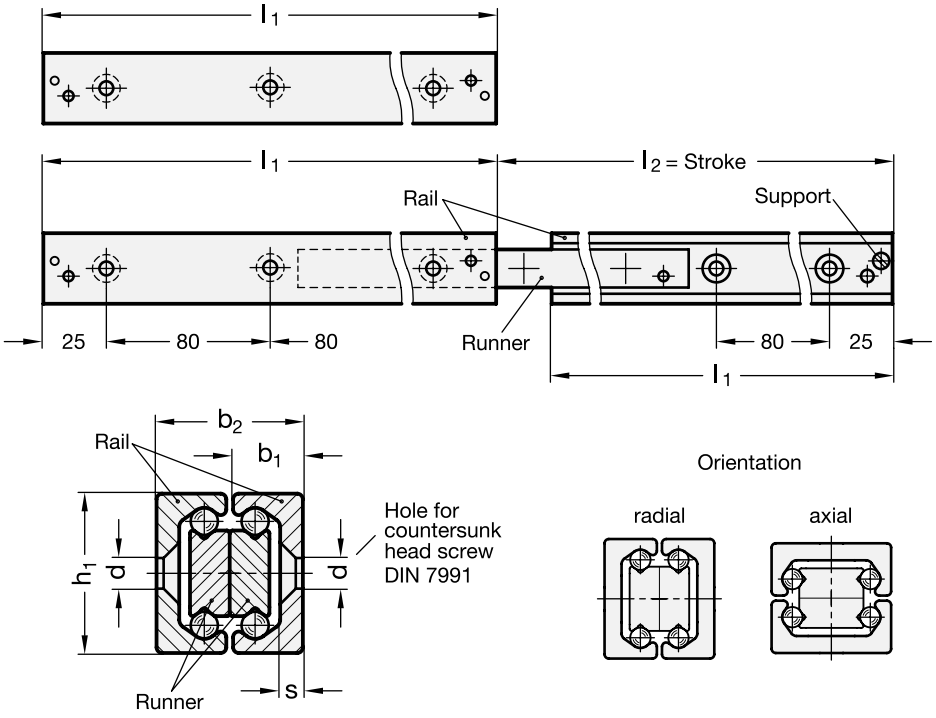
Information
Telescopic linear slides GN 2410 dual configuration, with full extension consist of two linear motion ball slide rails connected at the runners. They are used, for example, in material handling or automation applications, or in jigmaking, to achieve a sliding motion in a linear direction when long extensions with low construction height of the rail are required.

The dual configuration has the advantage that both the radial and axial load capacities are identical. Meanwhile this design has proven less susceptible to dirt in practical use.

The rails and runners are equal in length. Both runners can be extended so that an extension is reached which is longer than the rail base length l_1. Removing the support screws from the rails, allows an extension of the rails on both sides.

External elements should limit the maximum sliding distance; the supports of the rail have been designed to guard against the inadvertent extraction of the runner from the rail.

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



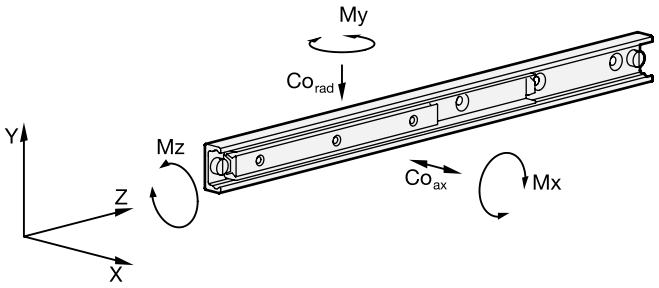
Standard Elements	Main dimensions						⚖
Description	h_1	$l_1 - l_2$	b_1	b_2	d	s	g
GN 2410-28-210	28	210 - 232	12.3	25.8	5.5	4	898
GN 2410-28-370	28	370 - 380	12.3	25.8	5.5	4	1630
GN 2410-28-450	28	450 - 464	12.3	25.8	5.5	4	1980
GN 2410-28-530	28	530 - 548	12.3	25.8	5.5	4	2300
GN 2410-35-370	35	370 - 406	16.5	34	6.5	3.5	2331
GN 2410-35-450	35	450 - 494	16.5	34	6.5	3.5	2835
GN 2410-35-530	35	530 - 558	16.5	34	6.5	3.5	3339
GN 2410-35-610	35	610 - 646	16.5	34	6.5	3.5	3843
GN 2410-43-450	43	450 - 486	21	44	8.5	4.5	5000
GN 2410-43-610	43	610 - 626	21	44	8.5	4.5	6770
GN 2410-43-770	43	770 - 796	21	44	8.5	4.5	8550
GN 2410-43-930	43	930 - 966	21	44	8.5	4.5	10320

Load rating of telescopic linear slides

in ascending order of the standard numbers

When selecting a suitable linear slide, it is primarily the available space, the desired stroke and the load carried which must be taken into consideration. The values listed below are intended as guidelines for selecting the most suitable nominal rail size.

The details on load rating are non-binding guide values given without liability and does not constitute any type of guarantee or warranty of its intended use. 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 rating

Description	Load ratings		Permissible load torques		
	Co rad in N	**Co ax** in N	**Mx** in Nm	**My** in Nm	**Mz** in Nm
GN 2402 -28- 60-...	3580	2500	37	25	18
-28- 80-...	4780	3345	65	45	23
-28-130-...	7765	5435	166	117	38
-28-210-...	12545	8780	430	300	62
-35-130-...	9980	6985	219	156	50
-35-210-...	16125	11290	560	397	87
-35-290-...	22270	15590	1085	745	109
-43-210-...	23140	16200	790	552	157
-43-370-...	40775	28540	2445	1710	275
GN 2404 -28-130	645	452	30	23	17
-28-210	1165	816	86	60	27
-28-290	2015	1410	190	135	41
-28-370	2540	1780	309	215	52
-28-450	3065	2145	540	316	64
-28-530	3595	2515	625	435	74
-35-290	2100	1470	218	155	56
-35-370	2685	1880	348	247	69
-35-450	3270	2285	515	365	80
-35-530	4350	3045	787	553	101
-35-610	4930	3450	1025	722	113
-35-690	5510	3860	1295	914	125
-43-370	3540	2480	444	313	119
-43-450	4905	3435	735	514	151
-43-530	6305	4415	1090	766	184
-43-610	7725	5410	1525	1065	210
-43-690	8185	5730	1850	1295	240
-43-770	9490	6530	2405	1685	273

Load rating of telescopic linear slides

in ascending order of the standard numbers

Description	Load ratings
	$C_{0\,rad}$ in N
GN 2406 -28- 290-E	587
-28- 370-E	793
-28- 450-E	999
-28- 530-E	1205
-28- 610-E	1510
-35- 450-E	1265
-35- 530-E	1700
-35- 690-E	2150
-35- 850-E	2830
-43- 530-E	2140
-43- 690-E	2885
-43- 850-E	4010
-43-1010-E	4755
-43-1490-E	3820

Description	Load ratings
	$C_{0\,rad}$ in N
GN 2408 -28-210-...	447
-28-370-...	1000
-28-450-...	1205
-28-530-...	1140
-35-370-...	1035
-35-450-...	1265
-35-530-...	1705
-35-610-...	1930
-43-450-...	1890
-43-610-...	3035
-43-770-...	3145
-43-930-...	2580

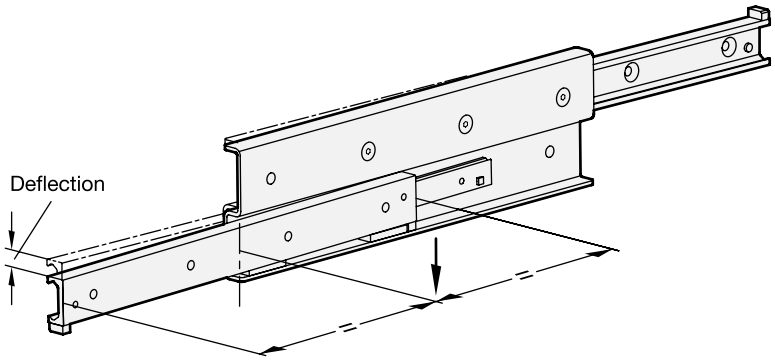
Description	Load ratings
	$C_{0\,rad}$ in N
GN 2410 -28-210	444
-28-370	496
-28-450	405
-28-530	342
-35-370	534
-35-450	439
-35-530	403
-35-610	346
-43-450	1370
-43-610	1115
-43-770	870
-43-930	714

No details on the permissible load torques are given for the telescopic linear slides as these are normally used for paired applications. Loads of these dimensions occur to a minor degree because it may be assumed that the surrounding construction has sufficient rigidity and stiffness. Transferring load torques within certain limited 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 given values are observed and if the telescopic linear slide is fully extended, a minor deflection (sag) occurs at the end of the runner or of the rail. This has normally no detrimental effect on the proper function of the application. If required, guide values may be given if requested.



Mounting screws, assignment of the mounting holes

The standard mounting hardware is DIN 7991-10.9 countersunk head screws, to be mounted with the recommended tightening torque. Depending on type, not all mounting holes may be utilized. In general, these holes can be left unused. In exceptional cases, especially in bilateral stroke, mounting holes can be accessed by loosening the support screws and by pulling out the runner. The support screws are then put back in place.

Travel speed, cage slip

The traversal speed in linear slides can be as much as 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 accelerating forces, cage slip may occur in some cases, especially in long ball cages. In cases such as these, 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 traversal distance should be provided for back positioning.

Linear guide rail systems
Structure

Linear guide rail systems allow the reliable and economical linear movement of hardware modules. Their outstanding attributes are low-maintenance operation, long service life and quiet running. These are attributes which make roller guide systems indispensable components for efficient and safe movement of devices, and meet the needs of facilities with low energy requirements.

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

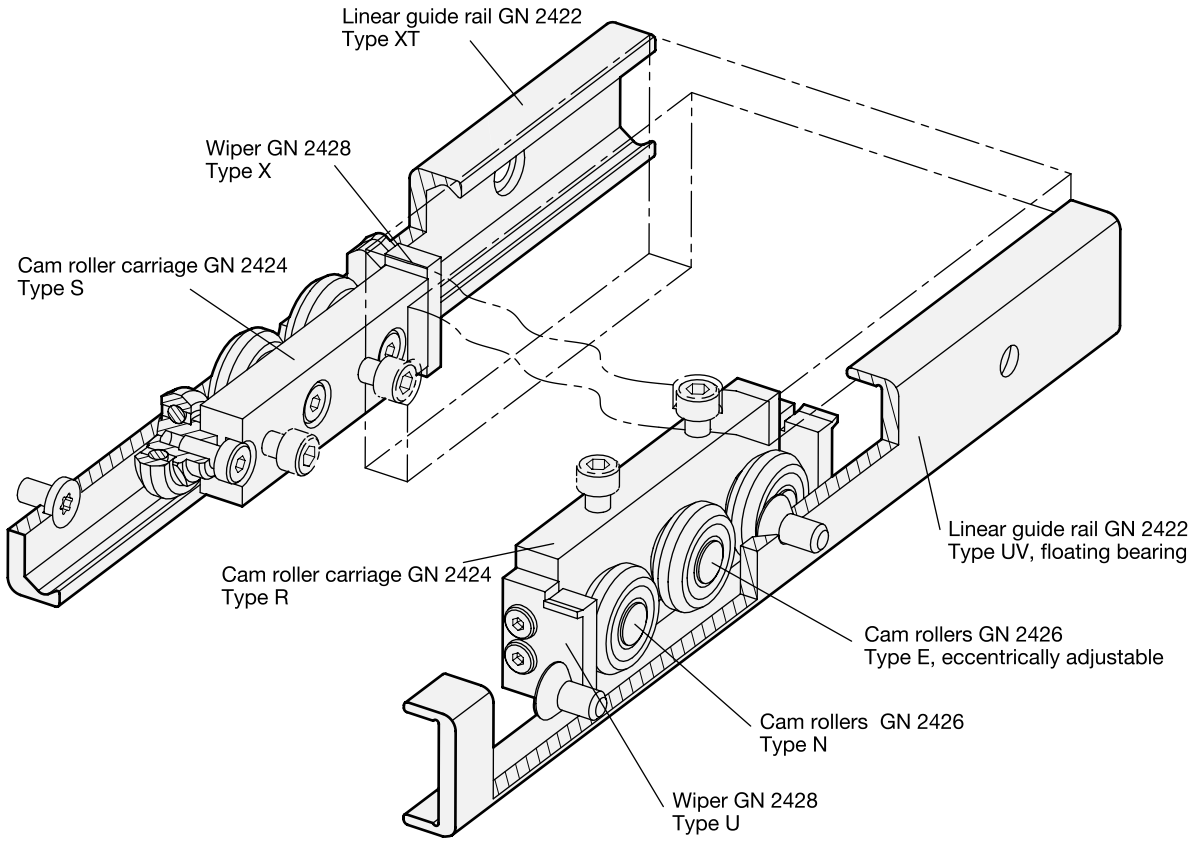
Rails are the foundations for linear guide rail systems. They can be constructed as fixed or floating bearing versions, with the fixed bearing type guiding the rollers running inside the rail on two levels, while the floating bearing type does so only on one level. By combining both versions, any misalignments or parallelism errors in the connected construction can be corrected. Complex preliminary work caused by the precision machining of surrounding parts can thus be kept to a minimum. Both rail versions can be mounted in one of two ways: cylindrical countersunk holes, or 90° conical holes for self-centering.

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

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 as combined rails for individual and customized requirements.



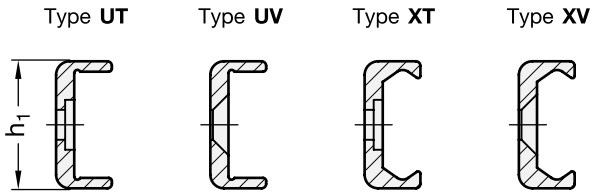
Linear guide rail systems

Components and extras

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

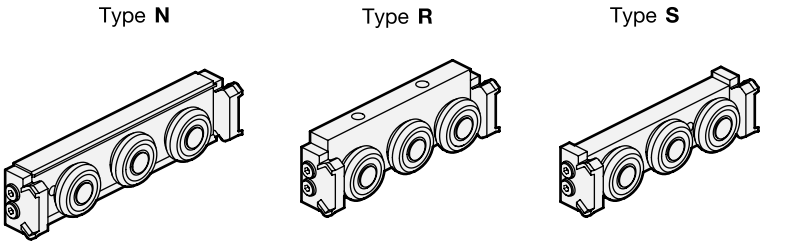
Upon request, fully pre-assembled cam roller linear guide rail systems including rails GN 2422 and cam roller carriages GN 2424 are available.

Cam roller linear guide rails
GN 2422 / Page 19



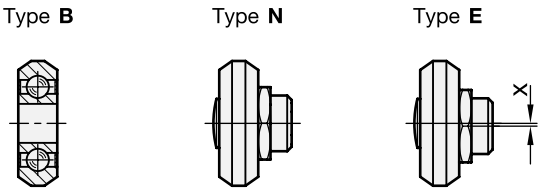
Floating bearing rails — Fixed bearing rails

Cam roller carriages
for rails
GN 2424 / Page 22



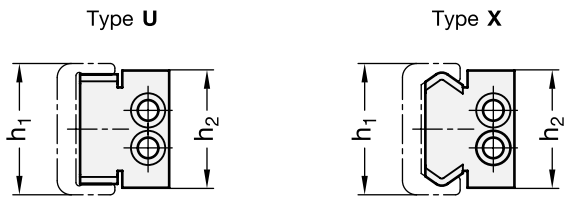
Normal cam roller carriages — Radial cam roller carriages — Narrow cam roller carriages

Cam rollers
for rails
GN 2426 / Page 26

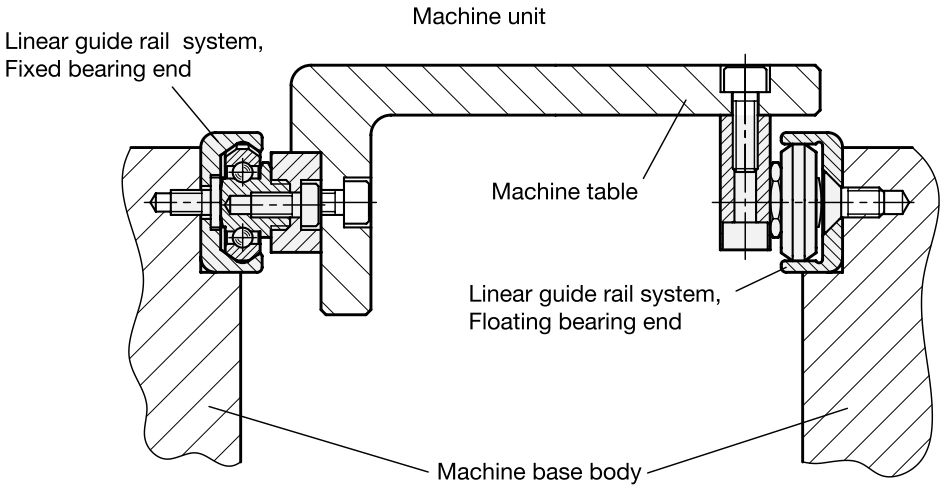


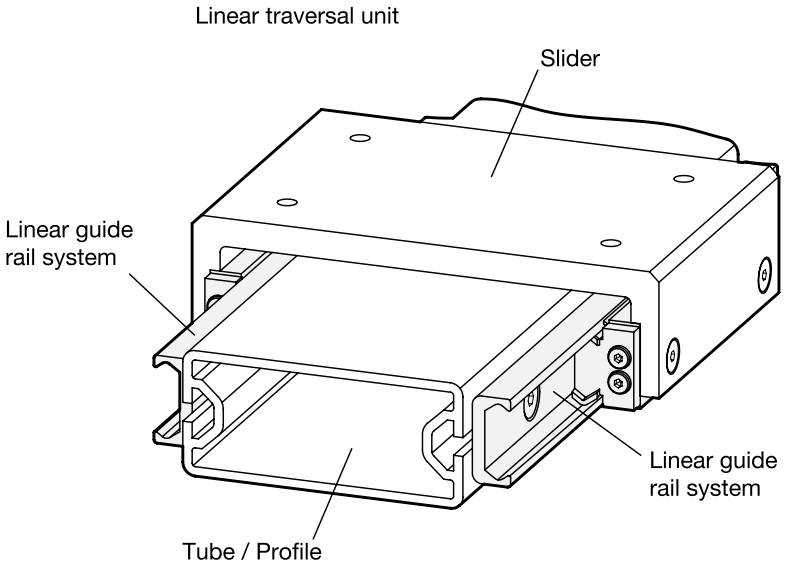
Roller with bore — Normal roller with centered bearing mounting point — Eccentric roller with eccentrical bearing mounting point

Wipers
for rails
GN 2428 / Page 27



for floating bearing rails — for fixed bearing rails





GN 2422

Cam roller linear guide rails

Specification

Types
- Type **UT**: Floating bearing rail, with mounting hole for flat head screw
- Type **UV**: Floating bearing rail, with mounting hole for countersunk screw
- Type **XT**: Fixed bearing rail, with mounting hole for flat head screw
- Type **XV**: Fixed bearing rail, with mounting hole for countersunk screw

Heat treatable steel
- zinc plated, blue passivated
- Raceways hardened, ground

Flat head screws (only for type UT / XT)
Steel
zinc plated, blue passivated

Information

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

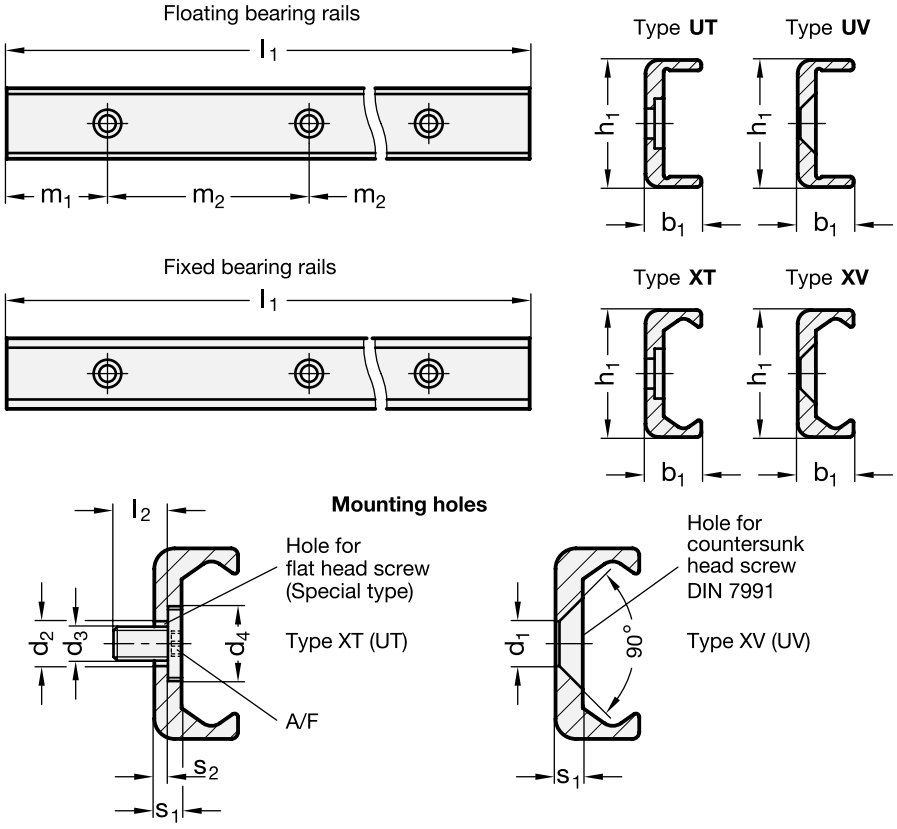
These systems feature high stability and quiet running at high traversal speeds. Thanks to the option of combining fixed and floating bearing rails, they cause no great stress to the surrounding construction, and thus allow parallelism errors to be compensated for. Flat head screws with extra low head are included with the rail Types UT and XT.

Accessory

- Cam roller carriages GN 2424 (see page 22)
- Cam rollers GN 2426 (see page 26)

On request

- other rail lengths (up to max. 3600 mm)
- other fixing hole distance m_1 / m_2



Standard Elements	Main dimensions													⚖
Description	h_1	l_1	m_1	b_1	d_1	d_2	d_3	d_4	l_2	m_2	s_1	s_2	A/F	g
GN 2422-18-240-40-UT	18	240	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	132
GN 2422-18-400-40-UT	18	240	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	220
GN 2422-18-560-40-UT	18	560	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	308
GN 2422-18-800-40-UT	18	800	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	440

Standard Elements	Main dimensions													⚖
Description	h_1	l_1	m_1	b_1	d_1	d_2	d_3	d_4	l_2	m_2	s_1	s_2	A/F	g
GN 2422-18-1040-40-UT	18	1040	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	572
GN 2422-18-1200-40-UT	18	1200	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	660
GN 2422-28-400-40-UT	28	400	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	484
GN 2422-28-560-40-UT	28	560	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	678
GN 2422-28-800-40-UT	28	800	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	968
GN 2422-28-1040-40-UT	28	1040	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	1258
GN 2422-28-1200-40-UT	28	1200	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	1452
GN 2422-28-1440-40-UT	28	1440	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	1742
GN 2422-35-400-40-UT	35	400	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	636
GN 2422-35-560-40-UT	35	560	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	890
GN 2422-35-800-40-UT	35	800	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	1272
GN 2422-35-1040-40-UT	35	1040	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	1654
GN 2422-35-1200-40-UT	35	1200	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	1908
GN 2422-35-1440-40-UT	35	1440	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	2290
GN 2422-43-400-40-UT	43	400	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	1004
GN 2422-43-560-40-UT	43	560	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	1406
GN 2422-43-800-40-UT	43	800	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	2008
GN 2422-43-1040-40-UT	43	1040	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	2610
GN 2422-43-1200-40-UT	43	1200	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	3012
GN 2422-43-1520-40-UT	43	1520	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	3815
GN 2422-43-2000-40-UT	43	2000	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	4500
GN 2422-18-240-40-UV	18	240	40	8.3	4.5	-	-	-	-	80	2.8	-	-	132
GN 2422-18-400-40-UV	18	400	40	8.3	4.5	-	-	-	-	80	2.8	-	-	220
GN 2422-18-560-40-UV	18	560	40	8.3	4.5	-	-	-	-	80	2.8	-	-	308
GN 2422-18-800-40-UV	18	800	40	8.3	4.5	-	-	-	-	80	2.8	-	-	440
GN 2422-18-1040-40-UV	18	1040	40	8.3	4.5	-	-	-	-	80	2.8	-	-	572
GN 2422-18-1200-40-UV	18	1200	40	8.3	4.5	-	-	-	-	80	2.8	-	-	660
GN 2422-28-400-40-UV	28	400	40	12.3	5.5	-	-	-	-	80	4	-	-	484
GN 2422-28-560-40-UV	28	560	40	12.3	5.5	-	-	-	-	80	4	-	-	678
GN 2422-28-800-40-UV	28	800	40	12.3	5.5	-	-	-	-	80	4	-	-	968
GN 2422-28-1040-40-UV	28	1040	40	12.3	5.5	-	-	-	-	80	4	-	-	1258
GN 2422-28-1200-40-UV	28	1200	40	12.3	5.5	-	-	-	-	80	4	-	-	1452
GN 2422-28-1440-40-UV	28	1440	40	12.3	5.5	-	-	-	-	80	4	-	-	1742
GN 2422-35-400-40-UV	35	400	40	16.5	6.5	-	-	-	-	80	3.5	-	-	636
GN 2422-35-560-40-UV	35	560	40	16.5	6.5	-	-	-	-	80	3.5	-	-	890
GN 2422-35-800-40-UV	35	800	40	16.5	6.5	-	-	-	-	80	3.5	-	-	1272
GN 2422-35-1040-40-UV	35	1040	40	16.5	6.5	-	-	-	-	80	3.5	-	-	1654
GN 2422-35-1200-40-UV	35	1200	40	16.5	6.5	-	-	-	-	80	3.5	-	-	1908
GN 2422-35-1440-40-UV	35	1440	40	16.5	6.5	-	-	-	-	80	3.5	-	-	2290
GN 2422-43-400-40-UV	43	400	40	21	8.5	-	-	-	-	80	4.5	-	-	1004
GN 2422-43-560-40-UV	43	560	40	21	8.5	-	-	-	-	80	4.5	-	-	1406
GN 2422-43-800-40-UV	43	800	40	21	8.5	-	-	-	-	80	4.5	-	-	2008
GN 2422-43-1040-40-UV	43	1040	40	21	8.5	-	-	-	-	80	4.5	-	-	2610
GN 2422-43-1200-40-UV	43	1200	40	21	8.5	-	-	-	-	80	4.5	-	-	3012
GN 2422-43-1520-40-UV	43	1520	40	21	8.5	-	-	-	-	80	4.5	-	-	3815
GN 2422-43-2000-40-UV	43	2000	40	21	8.5	-	-	-	-	80	4.5	-	-	4500
GN 2422-18-240-40-XT	18	240	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	132
GN 2422-18-400-40-XT	18	400	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	220

Standard Elements	Main dimensions													⚖
Description	h_1	l_1	m_1	b_1	d_1	d_2	d_3	d_4	l_2	m_2	s_1	s_2	A/F	g
GN 2422-18-560-40-XT	18	560	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	308
GN 2422-18-800-40-XT	18	800	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	440
GN 2422-18-1040-40-XT	18	1040	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	572
GN 2422-18-1200-40-XT	18	1200	40	8.3	-	5	M 4	9.5	8	80	2.8	0.8	T20	660
GN 2422-28-400-40-XT	28	400	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	484
GN 2422-28-560-40-XT	28	560	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	678
GN 2422-28-800-40-XT	28	800	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	968
GN 2422-28-1040-40-XT	28	1040	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	1258
GN 2422-28-1200-40-XT	28	1200	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	1452
GN 2422-28-1440-40-XT	28	1440	40	12.3	-	6.4	M 5	11	10	80	4	2	T25	1742
GN 2422-35-400-40-XT	35	400	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	636
GN 2422-35-560-40-XT	35	560	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	890
GN 2422-35-800-40-XT	35	800	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	1272
GN 2422-35-1040-40-XT	35	1040	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	1654
GN 2422-35-1200-40-XT	35	1200	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	1908
GN 2422-35-1440-40-XT	35	1440	40	16.5	-	8	M 6	15	12	80	3.5	0.8	T30	2290
GN 2422-43-400-40-XT	43	400	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	1004
GN 2422-43-560-40-XT	43	560	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	1406
GN 2422-43-800-40-XT	43	800	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	2008
GN 2422-43-1040-40-XT	43	1040	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	2610
GN 2422-43-1200-40-XT	43	1200	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	3012
GN 2422-43-1520-40-XT	43	1520	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	3815
GN 2422-43-2000-40-XT	43	2000	40	21	-	10.5	M 8	18	16	80	4.5	1.5	T40	4500
GN 2422-18-240-40-XV	18	240	40	8.3	4.5	-	-	-	-	80	2.8	-	-	132
GN 2422-18-400-40-XV	18	400	40	8.3	4.5	-	-	-	-	80	2.8	-	-	220
GN 2422-18-560-40-XV	18	560	40	8.3	4.5	-	-	-	-	80	2.8	-	-	308
GN 2422-18-800-40-XV	18	800	40	8.3	4.5	-	-	-	-	80	2.8	-	-	440
GN 2422-18-1040-40-XV	18	1040	40	8.3	4.5	-	-	-	-	80	2.8	-	-	572
GN 2422-18-1200-40-XV	18	1200	40	8.3	4.5	-	-	-	-	80	2.8	-	-	660
GN 2422-28-400-40-XV	28	400	40	12.3	5.5	-	-	-	-	80	4	-	-	484
GN 2422-28-560-40-XV	28	560	40	12.3	5.5	-	-	-	-	80	4	-	-	678
GN 2422-28-800-40-XV	28	800	40	12.3	5.5	-	-	-	-	80	4	-	-	968
GN 2422-28-1040-40-XV	28	1040	40	12.3	5.5	-	-	-	-	80	4	-	-	1258
GN 2422-28-1200-40-XV	28	1200	40	12.3	5.5	-	-	-	-	80	4	-	-	1452
GN 2422-28-1440-40-XV	28	1440	40	12.3	5.5	-	-	-	-	80	4	-	-	1752
GN 2422-35-400-40-XV	35	400	40	16.5	6.5	-	-	-	-	80	3.5	-	-	636
GN 2422-35-560-40-XV	35	560	40	16.5	6.5	-	-	-	-	80	3.5	-	-	890
GN 2422-35-800-40-XV	35	800	40	16.5	6.5	-	-	-	-	80	3.5	-	-	1272
GN 2422-35-1040-40-XV	35	1040	40	16.5	6.5	-	-	-	-	80	3.5	-	-	1654
GN 2422-35-1200-40-XV	35	1200	40	16.5	6.5	-	-	-	-	80	3.5	-	-	1908
GN 2422-35-1440-40-XV	35	1440	40	16.5	6.5	-	-	-	-	80	3.5	-	-	2290
GN 2422-43-400-40-XV	43	400	40	21	8.5	-	-	-	-	80	4.5	-	-	1004
GN 2422-43-560-40-XV	43	560	40	21	8.5	-	-	-	-	80	4.5	-	-	1406
GN 2422-43-800-40-XV	43	800	40	21	8.5	-	-	-	-	80	4.5	-	-	2008
GN 2422-43-1040-40-XV	43	1040	40	21	8.5	-	-	-	-	80	4.5	-	-	2610
GN 2422-43-1200-40-XV	43	1200	40	21	8.5	-	-	-	-	80	4.5	-	-	3012
GN 2422-43-1520-40-XV	43	1520	40	21	8.5	-	-	-	-	80	4.5	-	-	3815
GN 2422-43-2000-40-XV	43	2000	40	21	8.5	-	-	-	-	80	4.5	-	-	4500

GN 2424

Cam roller carriages

Specification

Types
- Type **N**: Normal roller carriage, central arrangement
- Type **R**: Radial roller carriage, lateral arrangement
- Type **S**: Narrow roller carriage, central arrangement

Version
- Version **U**: with wiper for floating bearing rail (U-rail)
- Version **X**: with wiper for fixed bearing rail (X-rail)

Base Body
- Aluminium (Type N)
- Steel (Type R / Type S)
  zinc plated, blue passivated

Rollers
- Anti-friction bearing steel, hardened
- Ball mounted, sealed (2RS)
- permanent lubrication

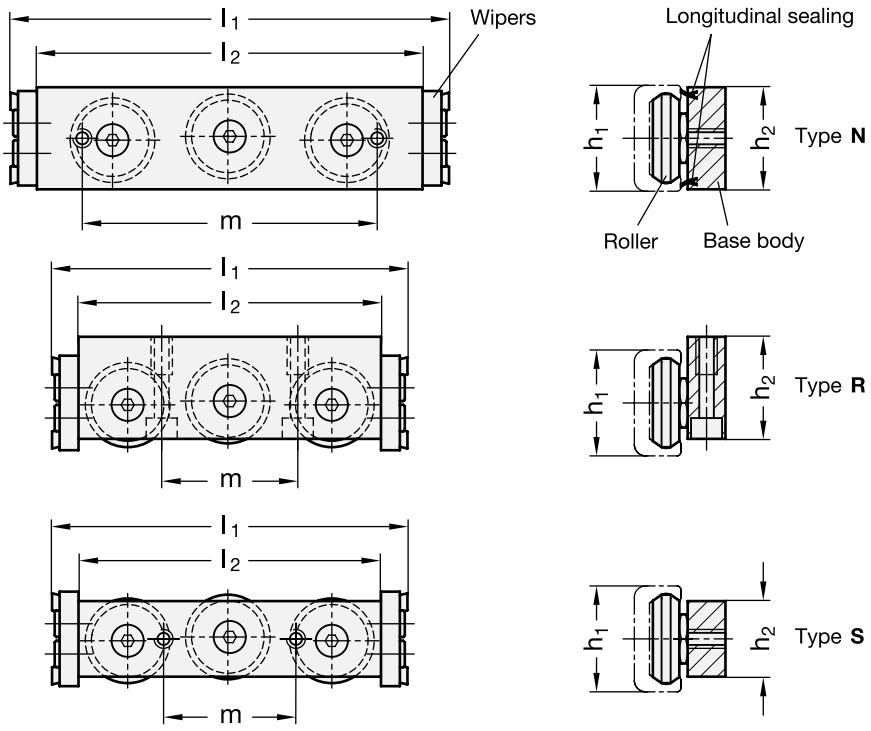
Wiper
- Plastic, PUR, grey
- Steel insert, zinc plated

Information

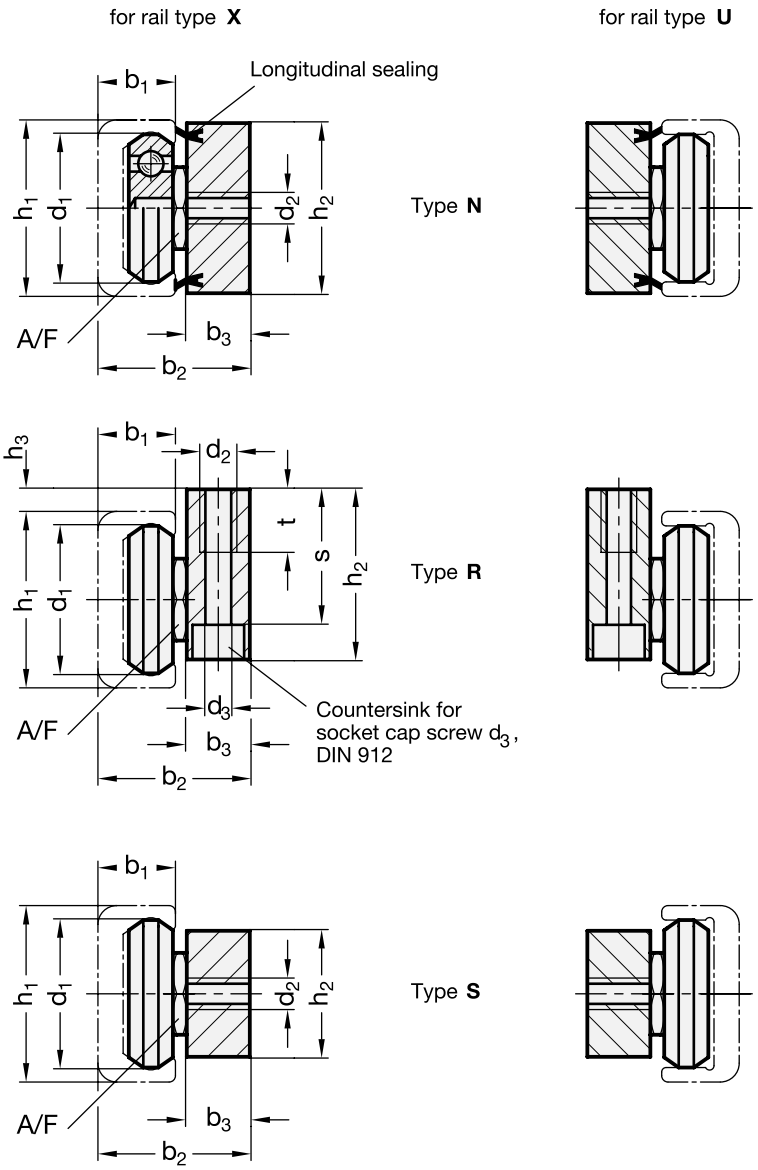
Cam roller carriages GN 2424 are combined with cam roller linear guide rails GN 2422 to build cam roller linear guide rail systems. They are used in mechanical engineering or jigmaking for the linear movement of plant equipment.

Depending on cam roller carriage type, these can be mounted in axial or radial direction to the roller axes. Also depending on 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 roller arrangements



Standard Elements	Main dimensions															⚖
Description	h_1	b_1	b_2	b_3	d_1	d_2	d_3	h_2	h_3	l_1	l_2	m	s	t	A/F	g
GN 2424-18-N-X	18	8.3	16.5	7.2	14	M 5	-	17	-	94	80	52	-	-	8	30
GN 2424-18-N-U	18	8.3	16.5	7.2	14	M 5	-	17	-	94	80	52	-	-	8	30
GN 2424-28-N-X	28	12.3	24.1	10	22.4	M 6	-	25	-	116	102	78	-	-	13	120
GN 2424-28-N-U	28	12.3	24.1	10	22.4	M 6	-	25	-	116	102	78	-	-	13	120
GN 2424-43-N-X	43	21	37.5	15	35	M 8	-	40	-	148	134	114	-	-	15	415
GN 2424-43-N-U	43	21	37.5	15	35	M 8	-	40	-	148	134	114	-	-	15	415
GN 2424-18-R-X	18	8.3	17.3	8	14	M 5	M 4	20	4	74	60	20	17	8	8	86
GN 2424-18-R-U	18	8.3	17.3	8	14	M 5	M 4	20	4	74	60	20	17	8	8	86
GN 2424-28-R-X	28	12.3	24.1	10	22.4	M 6	M 5	30	4	94	80	36	24.5	10	13	240
GN 2424-28-R-U	28	12.3	24.1	10	22.4	M 6	M 5	30	4	94	80	36	24.5	10	13	240
GN 2424-35-R-X	35	16.5	30	12	28	M 8	M 6	36	3	114	100	45	29.5	15	15	486
GN 2424-35-R-U	35	16.5	30	12	28	M 8	M 6	36	3	114	100	45	29.5	15	15	486
GN 2424-43-R-X	43	21	37.5	15	35	M 8	M 6	45	4	134	120	56	38.5	16	15	697
GN 2424-43-R-U	43	21	37.5	15	35	M 8	M 6	45	4	134	120	56	38.5	16	15	697
GN 2424-18-S-X	18	8.3	15	5.7	14	M 5	-	9.5	-	74	60	20	-	-	8	40
GN 2424-18-S-U	18	8.3	15	5.7	14	M 5	-	9.5	-	74	60	20	-	-	8	40
GN 2424-28-S-X	28	12.3	23.8	9.7	22.4	M 6	-	15	-	94	80	35	-	-	13	146
GN 2424-28-S-U	28	12.3	23.8	9.7	22.4	M 6	-	15	-	94	80	35	-	-	13	146
GN 2424-35-S-X	35	16.5	30	12	28	M 8	-	20	-	114	100	45	-	-	15	368
GN 2424-35-S-U	35	16.5	30	12	28	M 8	-	20	-	114	100	45	-	-	15	368
GN 2424-43-S-X	43	21	37	14.5	35	M 8	-	25	-	134	120	55	-	-	15	542
GN 2424-43-S-U	43	21	37	14.5	35	M 8	-	25	-	134	120	55	-	-	15	542

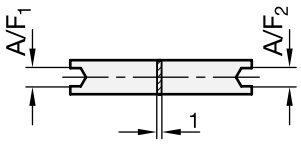


Assembly information

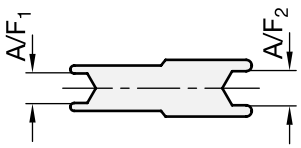
The initial tension or the clearance of the cam roller carriage in the rail can be determined during assembly. Both outer rollers carry the cam roller carriage, with the middle roller (for eccentric adjustment) supporting the carriage on the opposing rail side. Detailed assembly instructions and the necessary tool are included with every cam roller carriage.

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

A/F_1 / A/F_2 = 8 for construction size with h_1 = 18, Article No. **GN 2424.1-8-8**



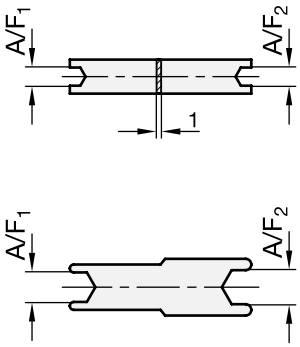
A/F_1 = 13 and A/F_2 = 15 for construction size with h_1 = 28 / 35 / 43, Article No. **GN 2424.1-13-15**



GN 2424.1

Open-end wrenches

Specification
Steel



Standard Elements	Main dimensions		⚖
Description	A/F1	A/F2	g
GN 2424.1-8-8	8	8	10
GN 2424.1-13-15	13	15	14

GN 2426

Cam rollers

Specification
Types
- Type **N**: Normal roller with centered bearing mounting point
- Type **E**: Eccentric roller with eccentric bearing mounting point
- Type **B**: Roller with bore

Roller
- Anti-friction bearing steel, hardened
- Dust and splash water protected
- permanent lubrication

Sealing disc
Plastic NBR **2RS**

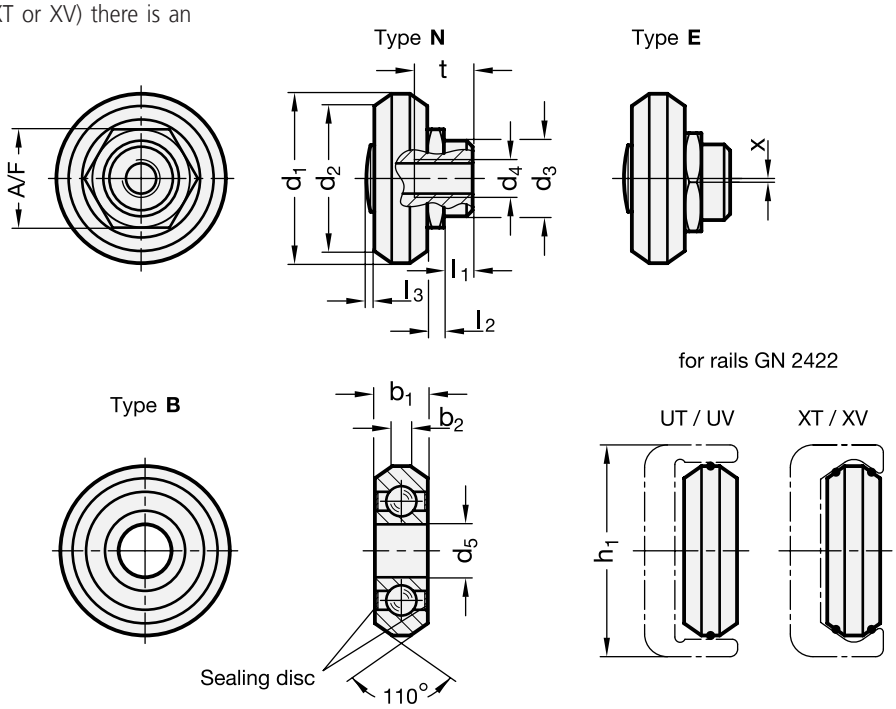
Bearing pivot
Steel
zinc plated, blue passivated

Information
Cam rollers GN 2426 are combined with cam roller linear guide rails GN 2422 to build individual and space-saving linear roller guide systems. Outer rim surfaces of the rollers are slightly convex, so that in conjunction with the correspondingly-shaped bearing rails (Type XT or XV) there is an accurate and smooth 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 rollers can be determined during assembly by using the adjustable eccentrical roller (Type E). The required open-end wrench, GN 2424.1 is available separately.
The sealed and permanently lubricated rollers guarantee long service life and superior running performance.

On request
Sealing discs, sheet metal profile with gap seal (2Z)



Standard Elements	Main dimensions														⚖
Description	h_1	b_1	b_2	d_1	d_2	d_3 -0.05	d_4	d_5 -0.008	l_1	l_2	l_3 max.	A/F	t	x	g
GN 2426-18-B-2RS	18	4	1.6	14	12.4	-	-	5	-	-	-	-	-	-	4
GN 2426-28-B-2RS	28	7	2.4	22.4	19.2	-	-	7	-	-	-	-	-	-	13
GN 2426-35-B-2RS	35	7.5	3.3	28	25.1	-	-	8	-	-	-	-	-	-	23
GN 2426-43-B-2RS	43	11	5	35	30.8	-	-	10	-	-	-	-	-	-	40
GN 2426-18-N-2RS	18	4	1.6	14	12.4	6	M 4	-	1.8	1.5	0.5	8	5	-	4
GN 2426-28-N-2RS	28	7	2.4	22.4	19.2	10	M 5	-	3.8	2.2	0.6	13	8	-	17
GN 2426-35-N-2RS	35	7.5	3.3	28	25.1	12	M 5	-	4.2	2.5	0.7	15	9	-	32
GN 2426-43-N-2RS	43	11	5	35	30.8	12	M 6	-	4.3	2.5	0.7	15	11	-	63
GN 2426-18-E-2RS	18	4	1.6	14	12.4	6	M 4	-	1.8	1.5	0.5	8	5	0.4	4
GN 2426-28-E-2RS	28	7	2.4	22.4	19.2	10	M 5	-	3.8	2.2	0.6	13	8	0.5	17
GN 2426-35-E-2RS	35	7.5	3.3	28	25.1	12	M 5	-	4.2	2.5	0.7	15	9	0.7	32
GN 2426-43-E-2RS	43	11	5	35	30.8	12	M 6	-	4.3	2.5	0.7	15	11	0.8	63

GN 2428

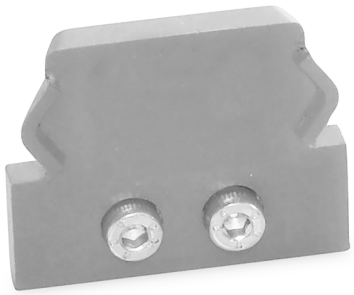
Wipers

Specification
Types
- Type **U**: for floating bearing rails
- Type **X**: for fixed bearing rails

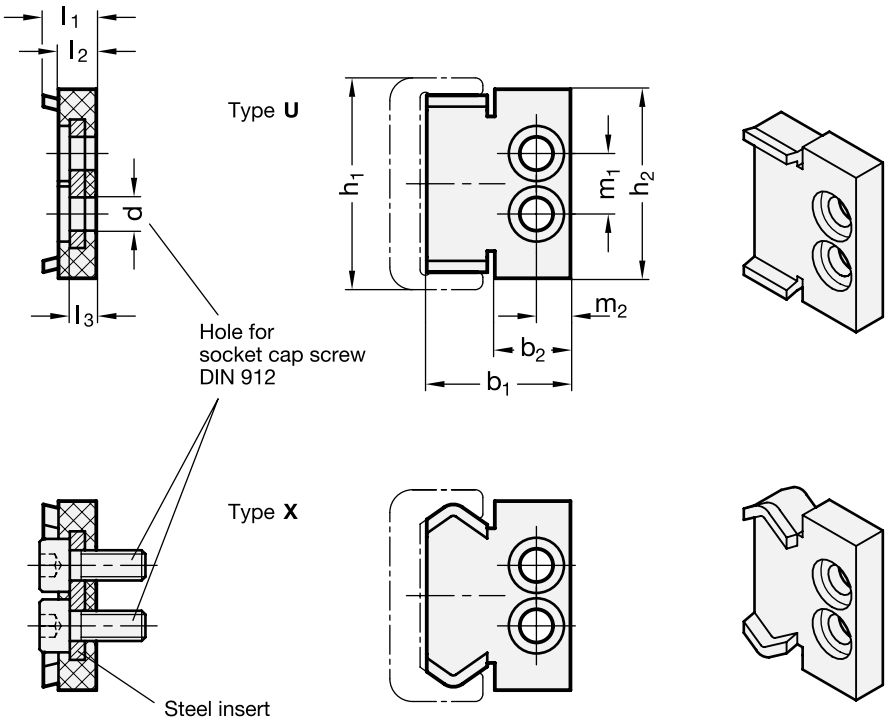
Wiper
Plastic PUR, grey

Bracing core
Steel, zinc plated

Cylinder head screw DIN 912
Steel
zinc plated, blue passivated

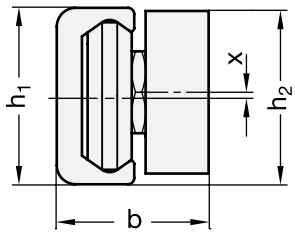


Information
Wipers GN 2428 protect against dirt deposits on rails and rollers. For size h_1 = 18 the wiper is attached with only one central screw. Screws are included parts of the order.



Standard Elements	Main dimensions										⚖
Description	h_1	b_1	b_2	d	h_2	l_1	l_2	$l_{3\ max.}$	m_1	m_2	g
GN 2428-18-U	18	12.6	5.6	M 3	17	7	5	3.5	-	3.5	2
GN 2428-28-U	28	19	10	M 4	25	7	5	3.5	8	4.5	5
GN 2428-35-U	35	25.5	12.5	M 4	32	7	5	3.5	10	5.5	10
GN 2428-43-U	43	32.2	15	M 4	40	7	5	3.5	12	7.5	16
GN 2428-18-X	18	12.6	5.6	M 3	17	7	5	3.5	-	3.5	2
GN 2428-28-X	28	19	10	M 4	25	7	5	3.5	8	4.5	5
GN 2428-35-X	35	25.5	12.5	M 4	32	7	5	3.5	10	5.5	10
GN 2428-43-X	43	32.2	15	M 4	40	7	5	3.5	12	7.5	16

Tolerance for mounted linear guide rail systems



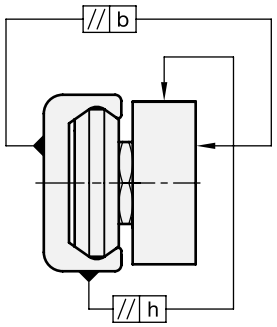
In the combination of rails GN 2422 and cam roller carriages GN 2424, the following dimensions / tolerances exist.

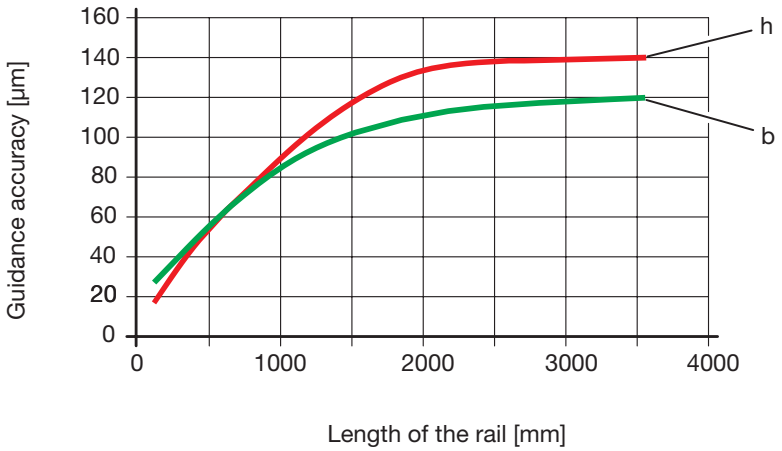
If several cam roller carriages are installed into one rail, an offset x can occur between the cam roller carriages which must be added to the dimension h_2.

h_1	b	h_2	x
18 +0.25/-0.10	+0.15/-0.16	+0.25/-0.25	±0.20
28 +0.25/-0.10	+0.25/-0.10	+0.15/-0.35	±0.20
35 +0.35/-0.10	+0.25/-0.10	+0.10/-0.30	±0.20
43 +0.36/-0.10	+0.25/-0.10	+0.20/-0.35	±0.20

Guidance accuracy

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





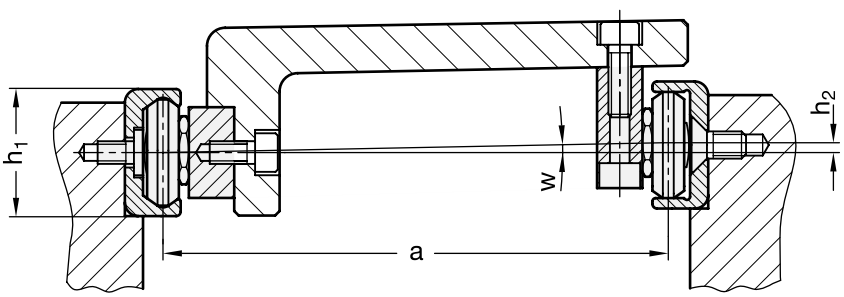
Permissible height offset

The fixed and floating bearing principle ensures that misalignments in the base construction are compensated. However, when using Type UV / UT and XV / XT rails, certain limits should not be exceeded. 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 must be reduced by 30% once the specified value is reached.

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

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

h_2 = 650 mm x tan 0.171° = 1.94 mm

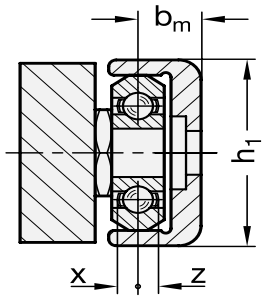


h_1	w max.
18	0.057°
28	0.143°
35	0.151°
43	0.171°

Permissible lateral offset

It is possible to compensate for angular defects 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.

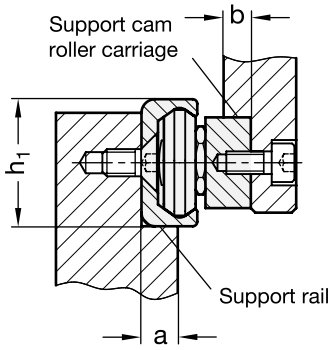
A parallelism or angular error can thus be compensated for across the whole length of the rail, which corresponds to an offset from the sum of the values for x and z.



h1	b m	x	z
18	6.3	1.1	0.3
28	8.6	1.3	0.7
35	10.5	2.7	1.3
43	14.5	2.5	1.5

Support widths

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

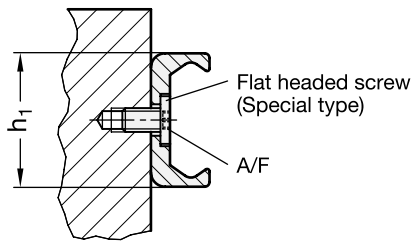


h1	a	b
18	5	4
28	8	4
35	11	5
43	14	5

Tightening torque

When positioning the rails with countersunk mounting holes, Type UT and XT, make sure the surface is flat and the mating tapped holes are tapped deep enough so the flat head screw is flush with the rail.

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



h1	Screw	A/F Drive	Tightening torque
18	M 4 x 8	T20	3 Nm
28	M 5 x 10	T25	9 Nm
35	M 6 x 12	T30	14 Nm
43	M 8 x 16	T40	24 Nm

Traversal speed

Depending on 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 heavy duty lubricant for linear guide rail systems, such as Klüberplex BE 31-222, using a brush.

Check the lubricant film at regular intervals for any dirt or pollution, e.g. with metal chips.

In the event of visble pollution or clear discoloration of the lubricant, use a clean rag to clean the rails and the rollers and apply new lubricant.

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

Operational temperatures

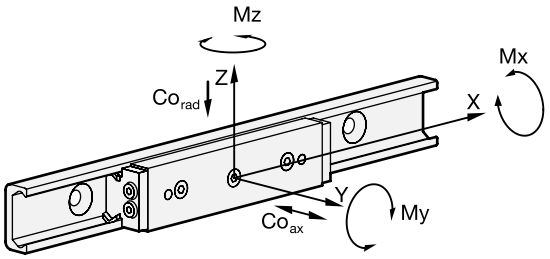
The components of the roller guide systems are suitable for use in a temperature range of -30 °C to 130 °C.

Load rating

The installation space, the desired mode of attachment and the load to be carried are the determining factors when selecting the best possible roller guide system. The values given below will help in selecting the most suitable cam roller carriage or the most suitable cam rollers.

The details on load capacity are non-binding guide values given without liability and does not constitute any type of guarantee or warranty of intended use. 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.

Description		Load ratings in main load direction		Permissible load torques		
		Co rad in N	**Co ax** in N	**Mx** in Nm	**My** in Nm	**Mz** in Nm
GN 2424	-18-...	825	260	1.6	8.3	4.8
	-28-...	2210	650	6.4	28	16.4
	-35-...	3550	1070	13.2	63	34.1
	-43-...	5520	1580	23.7	104.7	60.1
GN 2426	-18-...	410	-	-	-	-
	-28-...	1100	-	-	-	-
	-35-...	1760	-	-	-	-
	-43-...	2700	-	-	-	-



Cam roller carriages

Instructions for installation - Linear guide rail systems

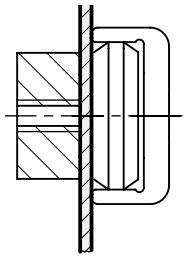
Linear guide rail systems consist of a cam roller linear guide rail GN 2422 and a cam roller carriage GN 2424. All components are packed separately and supplied not assembled. When delivered, the play between cam roller carriage and rail is not preset.

During assembly, set the cam roller carriage as follows:

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

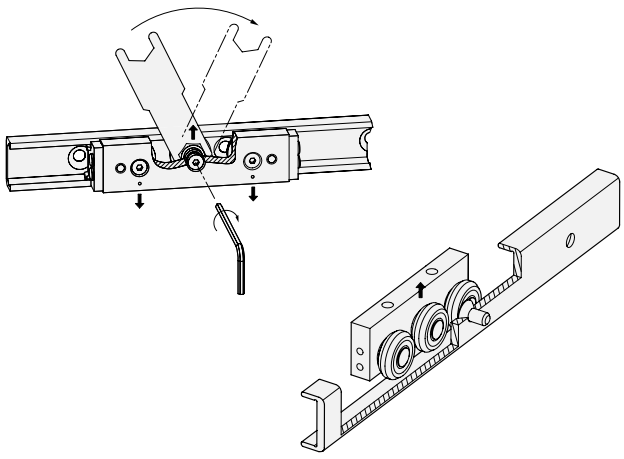
2. Slightly loosen the mounting screw of the central, eccentrically adjustable roller and insert the cam roller carriage (without the wipers supplied) into the rail (see also items 4 and 6).

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.



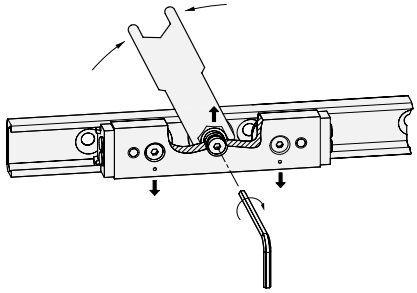
Use support for floating bearing rails!

4. Insert the open-end wrench GN 2424.1 (included) between the eccentric 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 cam rollers / 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 roller carriage free of play. Excessive pre-tensioning must be avoided because this will increase friction and reduce useful 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 free-moving, with the cam roller carriage having any play or jamming at no point inside the rail.

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

h_1	Tightening torque
18	3 Nm
28	7 Nm
35	7 Nm
43	12 Nm

9. Now mount the wipers, and for cam rollers carriage Type N, 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 / rollers are properly lubricated using a heavy duty lubricant for linear guidance.

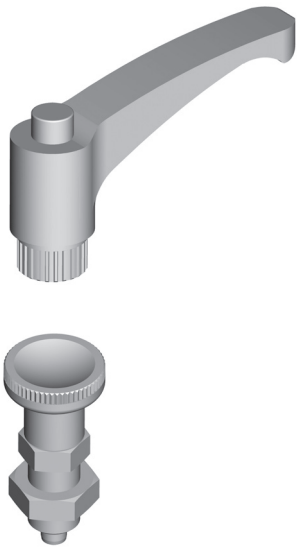
Electronic catalogue

The electronic version of the Elesa+Ganter General Catalogue on DVD or on www.elesa-ganter.com offers the design-engineer the possibility to search for the right element for the application either by going through the catalogue pages on the video or by selecting from the menus.

For each product series you can find:
- colour photos
- technical information
- line drawings and related dimension tables
- 2D CAD drawings
- 3D CAD drawings

2D CAD drawings

3D CAD drawings



3D CAD drawings are available on the www.elesa-ganter.com website almost in all formats.

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