

Aluminium Roller Guides

ORIGA – simply the first


HOERBIGER
because performance counts



The characteristics of ORIGA aluminium roller guides from HOERBIGER are very high performance and low weight.

They are quiet and precise in operation.

Application

Aluminium roller guides provide smooth operation and high load carrying capacity for industrial automation.

By the use of lightweight aluminium components the moving masses are minimised, travel speeds are increased and actuation energy is saved.

Their smooth action and speeds up to 10 m/s make them ideal for widespread use in many areas of application.

Product advantages

- Light weight (aluminium)
- Smooth operation
- Speeds up to 10 m/s
- Loading from any direction
- Virtually grease-free
- Flexible mounting dimensions
- High load capability

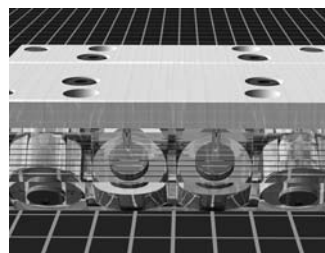
Design

- Double rail
- Single rail available in a standard version, a rustproof version and a LOW COST version

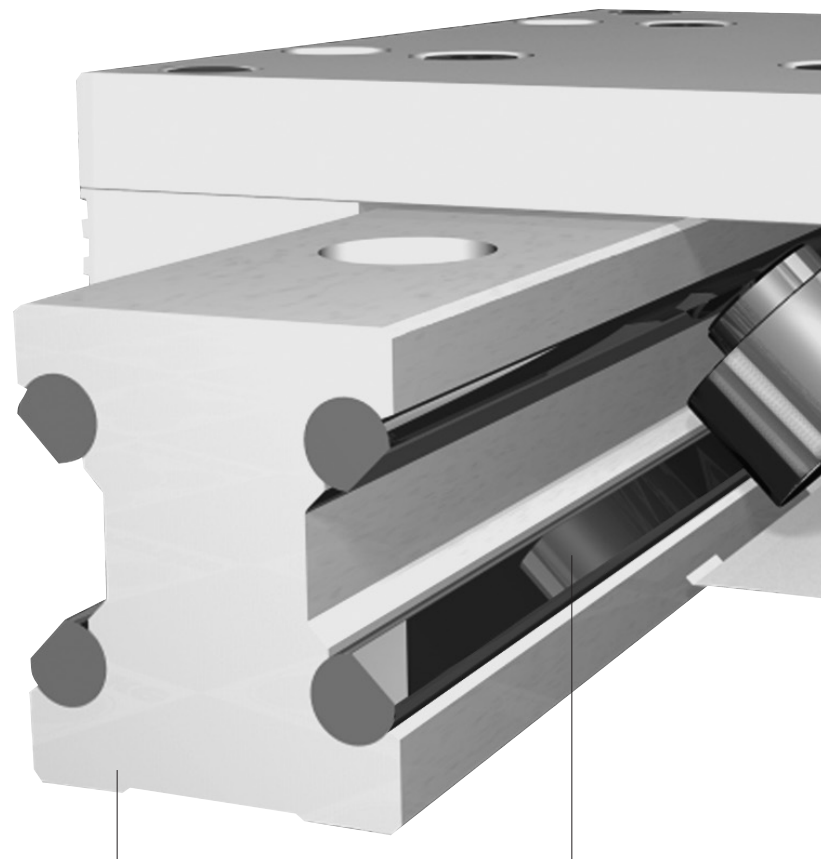
Technical data

- Sizes 12, 15, 20, 25, 35 and 45
- Rail lengths 300 mm to 4000 mm (other lengths on request). For longer travel the guide rails can be joined together.

See technical section for further technical details.



Rollers of standard roller cassette

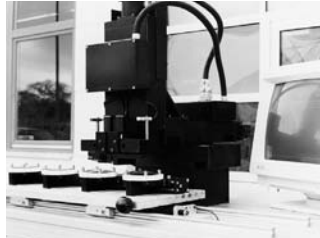


Rail profiles and roller cassettes made of aluminium

Ground and calibrated tracks

Application examples examples

Aluminium roller guides in a cutting machine for spectacle lenses. Both the work piece carriers and the motorised X-Y table axis are equipped with roller guides. The smooth operation and precision of the equipment ensures a fine cutting action. (Kasch company photo)



Aluminium roller guides in an automatic vibrator for flattening printed sheets of paper. To guarantee even pressure on the sheets of paper, the roller bridge is supported by precision roller guides. (Baumann company photo)



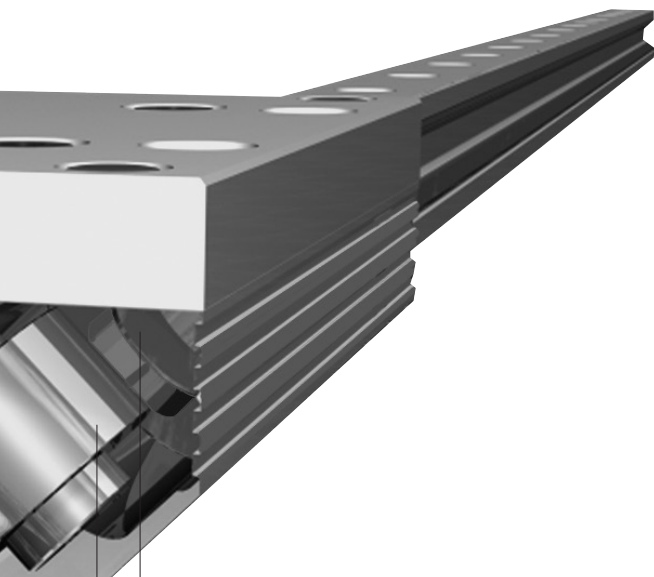
Handling units for medical equipment. Smooth, easy movement with guideline roller guide. (Dräger company photo)



Aluminium roller guides in the sliding carriage of a machine for producing cables. The projecting arm of the carriage is guided by two double rails each with two roller cassettes and can be moved manually with minimal force because of the low friction properties. (Kabelmat company photo)



Single rail and roller shoe versions of the aluminium roller guide in a handling arrangement for stacks of paper. Various fittings and limit stops for stacking are moved on two axes horizontally and vertically. The robustness and reliability of the roller guides allows for continuous operation under high load conditions. (Solms company photo)



Rollers arranged crosswise to handle loading from any direction

Rollers on needle bearings for smooth operation at speeds up to 10 m/s

Double Rails

Series GDL-FD

Single Rails

Series GDL-FE

Characteristics for Double Rails and Single Rails

Characteristic	Unit	Description
Sealing		The roller shoe and cassettes are fitted with felt wiper rings, in a clip-on housing. See page 11 for spare wipers
Mounting		Rails and roller shoes with screw-quality 8.8, washer to DIN 433
Loads		See load data in the table. We are happy to calculate loads and service life for you on request
Acceleration, Deceleration	m/s ²	max. 40
Installation		In any position
Adjustment		The roller shoes can be adjusted/readjusted by the customer
Lengths		L = 300 mm to 4000 mm – For the stainless steel version size 15 L 300 mm to 3000 mm – Other lengths on request – For longer travel the guide rails can be joined together
Lubrication		Lifetime lubrication with roller bearing grease
Speed	m/s	up to 10
Materials Standard version		Rails – Aluminium, anodized Tracks – high alloy spring steel Roller cassettes/ roller shoes – Aluminium, anodized Rollers – Roller bearing steel
Materials Stainless steel version		Rails – Aluminium, anodized Tracks – Stainless spring steel Roller cassettes/ roller shoes – Aluminium, anodized Rollers – Stainless roller bearing steel
Operating temperature	°C	-20 to +100



Double Rails

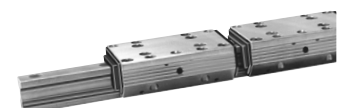
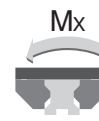
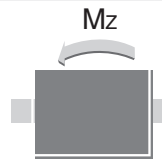
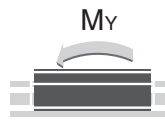
Series GDL-FD

Single Rails

Series GDL-FE

Loads, Moments and Weights											
Size		Version		Load [N]		M _y / M _z [Nm] *		M _x [Nm] *		Weight (Mass) [kg]	
				C	Co	stat.	dyn.	stat.	dyn.	Cassette	Double rail / m
12	Standard	2800	3000	43	40	27	25	0.10	0.4		
	Stainless	–	–	–	–	–	–	–	–		
15	Standard	4200	3400	58	72	37	45	0.17	0.8		
	Stainless	1800	2200	37	30	23	19	0.17	0.8		
20	Standard	5400	5400	111	111	76	76	0.35	0.9		
	Stainless	2000	2500	52	41	35	28	0.35	0.9		
25	Standard	9000	10100	222	198	158	142	0.51	1.8		
	Stainless	3400	4700	105	75	75	53	0.51	1.8		
35	Standard	12500	18000	559	388	423	294	1.39	3.2		
	Stainless	5600	7400	229	174	173	131	1.39	3.2		
45	Standard	21200	25900	983	806	827	678	2.53	5.5		
	Stainless	13100	16500	626	500	526	420	2.53	5.5		
12	Low Cost	620	170	2.4	8.9	1.6	5.7	0.09	0.4		
15	Low Cost	700	230	4	12	2.5	7.5	0.16	0.8		
20	Low Cost	940	300	6	19	4	13	0.32	0.9		
25	Low Cost	1500	700	15	32	11	23	0.46	1.8		
35	Low Cost	3100	1400	42	95	32	72	1.22	3.2		
45	Low Cost	6300	2700	103	238	86	200	2.47	5.5		

*) **Recommended safety factors**
 Condition: Screw 8.8
 Compression load: S>1.2
 Tensile load: S>2.5
 Torque load: S>4.0



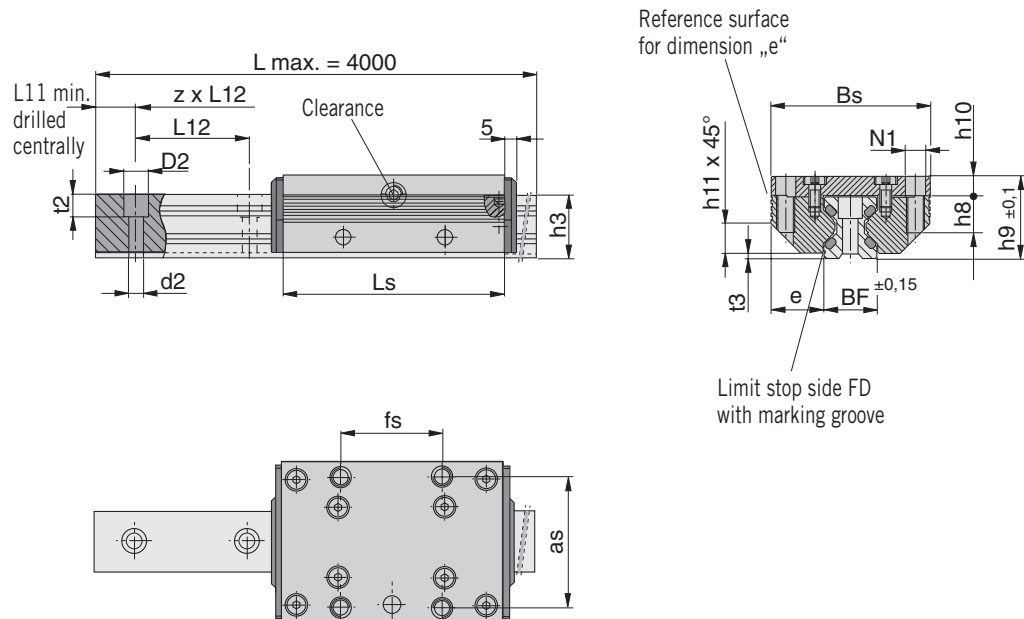
Double Rails

Series GDL-FD

Roller Cassettes

Series RK-FD

Dimensions (mm)



Dimension Table

Size	Ls	BF	Bs	h3	h9	as	fs	d2	D2
12	64	12	37	14.7	19	30	25	3.4	6
15	78	15.5	47	18.7	24	38	30	4.5	8
20	92	21.0	63	22.6	30	53	40	5.5	10
25	98	23.0	70	27.0	36	57	45	6.6	11
35	135	32.0	100	37.0	48	82	62	9.0	15
45	165	45.0	120	46.0	60	100	80	11.0	18

Size	e	h8	h10	h11	L11	L12	t2	t3	N1
12	12.50	8	4.0	6	min.10	40	5.5	1.4	M4
15	15.75	10	5.0	8	min.10	60	6	2.0	M5
20	21.00	12	7.0	11	min.10	60	7	2.0	M6
25	23.50	16	8.5	13	min.10	60	10	2.5	M8
35	34.00	20	10.5	20	min.12	80	11.5	3.5	M10
45	37.50	24	13.5	22	min.16	105	14.5	4.0	M12

Dimensions in mm

Order Instructions

Size	Version	Order-No.	
		Double rail GDL-FD	Cassette RK-FD
12	Standard	20929	20931
	Stainless	–	–
15	Standard	20506	20518
	Stainless	20897	20882
20	Standard	20507	20519
	Stainless	20898	20883
25	Standard	20508	20520
	Stainless	20899	20884
35	Standard	20829	20837
	Stainless	20900	20885
45	Standard	20830	20838
	Stainless	20901	20886
12	Low Cost	–	20993
15	Low Cost	–	20521
20	Low Cost	–	20522
25	Low Cost	–	20523
35	Low Cost	–	20839
45	Low Cost	–	20840

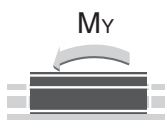
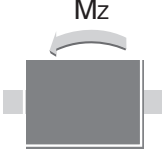

Double Rails
Series GDL-FD
**Roller
Cassettes**
Series RK-FD

Pair of Single Rail

Series GDL-FE

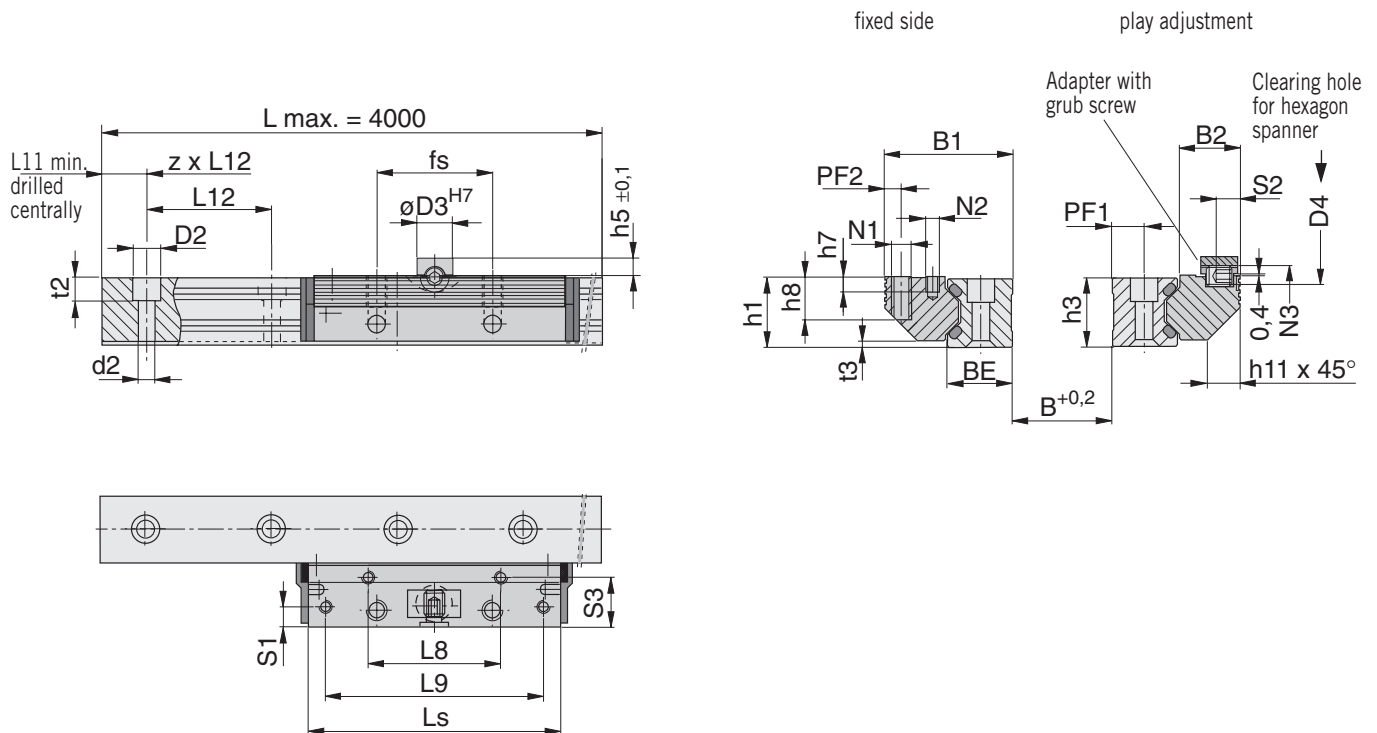
Pair of Roller Shoes

Series RS-FE

Loads, Moments and Weights											
		*) Recommended safety factors Condition: Screw 8.8 Compression load: $S > 1.2$ Tensile load: $S > 2.5$ Torque load: $S > 4.0$									
Size	Version	Load [N]		M_y / M_z [Nm] *		M_x [Nm] *		Weight (Mass) [kg]			
		C	Co	stat.	dyn.	stat.	dyn.	Pair Roller Shoes	Single Rail pair / m		
12	Standard	2800	3000	43	40	1.5 (B+30.3)	1.4 (B+30.3)	0.07	0.8		
	Stainless	-	-	-	-	-	-	-	-		
15	Standard	4200	3400	58	72	1.7 (B+36.5)	2.1 (B+36.5)	0.12	1.6		
	Stainless	1800	2200	37	30	1.1 (B+36.5)	0.9 (B+36.5)	0.12	1.6		
20	Standard	5400	5400	111	111	2.72 (B+47)	2.7 (B+47)	0.23	2.0		
	Stainless	2000	2500	52	41	1.3 (B+47)	1.0 (B+47)	0.23	2.0		
25	Standard	9000	10100	222	198	5.0 (B+58.4)	4.5 (B+58.4)	0.35	3.8		
	Stainless	3400	4700	105	76	2.4 (B+58.4)	1.7 (B+58.4)	0.35	3.8		
35	Standard	12500	18000	559	388	9.0 (B+85)	6.3 (B+85)	1.00	7.0		
	Stainless	5600	7400	229	174	3.7 (B+85)	2.8 (B+85)	1.00	7.0		
45	Standard	21200	25900	983	806	12.9 (B+109)	10.6 (B+109)	1.80	11.2		
	Stainless	13100	16500	626	500	8.2 (B+109)	6.6 (B+109)	1.80	11.2		
12	Low Cost	620	170	2.4	8.9	0.08 (B+30.3)	0.3 (B+30.3)	0.06	0.8		
15	Low Cost	700	230	4	12	0.1 (B+36.5)	0.35 (B+36.5)	0.11	1.6		
20	Low Cost	940	300	6	19	0.15 (B+47)	0.5 (B+47)	0.21	2.0		
25	Low Cost	1500	700	15	32	0.35 (B+58.4)	0.7 (B+58.4)	0.32	3.8		
35	Low Cost	3100	1400	42	95	0.7 (B+85)	1.5 (B+85)	0.92	7.0		
45	Low Cost	6300	2700	103	238	1.4 (B+109)	3.1 (B+109)	1.68	11.2		



Dimensions (mm)



Dimension Table

Size	Ls	BE	B1	B2	d2	D2	D3 ^{H7}	D4	fs	h1	h3	h5	h7	h8
12	64	12.00	24.5	11.9	3.4	6	8	3	25	15.0	14.7	4	6.0	8
15	78	15.25	30.9	15.2	4.5	8	10	4	30	19.0	18.7	5	7.5	10
20	92	20.00	40.9	20.4	5.5	10	10	4	40	23.0	22.6	5	8.0	12
25	98	25.00	48.4	22.9	6.6	11	14	6	45	27.5	27.0	7	5.0	16
35	135	35.00	68.9	32.9	9.0	15	14	6	62	37.5	37.0	7	7.5	20
45	165	45.00	82.4	36.4	11.0	18	14	6	80	46.5	46.0	7	9.5	24

Size	h11	L8	L9	L11	L12	t2	t3	N1	N2	N3	PF1	PF2	S1	S2	S3
12	6	29	57	min.10	40	5.5	1.4	M4	M3	M4	5.5	3.4	3.4	4.9	9.7
15	8	34	68	min.10	60	6	2.0	M5	M4	M6	7.0	4.4	4.9	5.9	12.4
20	11	42	80	min.10	60	7	2.0	M6	M5	M6	9.5	4.9	5.9	5.9	16.9
25	13	48	84	min.10	60	10	2.5	M8	M5	M8	12.0	6.4	7.4	8.9	19.4
35	20	67	117	min.12	80	11.5	3.5	M10	M6	M8	17.0	8.9	8.9	8.9	28.4
45	22	83	146	min.16	105	14.5	4.0	M12	M8	M8	22.0	9.9	9.9	8.9	30.9

Dimensions in mm

Pair of Single Rail

Series GDL-FE

Pair of Roller Shoes

Series RS-FE

Order Instructions

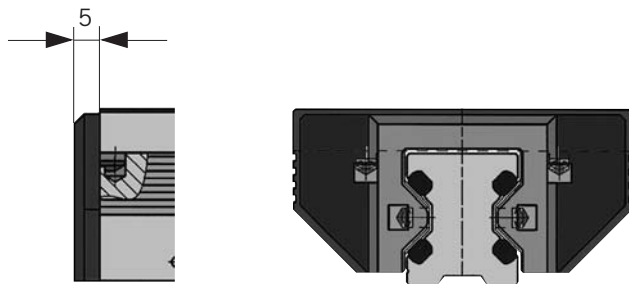
Size	Version	Order No.	
		Pair of Single Rails GDL-FE	Pair of Roller Shoes RS-FE
12	Standard	20928	20930
	Stainless	–	–
15	Standard	20500	20512
	Stainless	20892	20877
20	Standard	20501	20513
	Stainless	20893	20878
25	Standard	20502	20514
	Stainless	20894	20879
35	Standard	20825	20833
	Stainless	20895	20880
45	Standard	20826	20834
	Stainless	20896	20881
12	Low Cost	–	20995
15	Low Cost	–	20515
20	Low Cost	–	20516
25	Low Cost	–	20517
35	Low Cost	–	20835
45	Low Cost	–	20836



Standard Version with wiper

Integrated into an additional cover, the felt wiper is impregnated with oil. Depending on the degree of contamination, these wipers last for some 6000 km, after which the felt wipers can either be washed or replaced.

For optimal functionality, all holes in the guide rails should be filled with the plastic plugs.



Order Instructions Wiper-Spares

for size	for version – Standard – Low Cost – Stainless
12	20996
15	20813
20	20814
25	20815
35	20816
45	20817

Delivery information:

- Scope of supply – 1 pair
- with your order, please indicate whether a bonded, screwed or clipped version is required

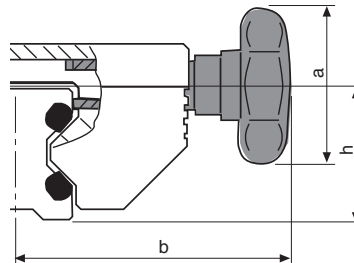
Accessories

Standard Version with Wiper

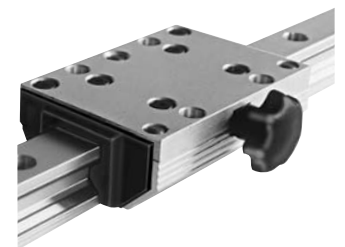


Version with Position Lock

This version features a rotating knob, which locks the carriage into position at any desired point of the track. The mechanism does not exert any force on the guide system. The position lock is used in applications where the carriage is moved manually, clamping applications and tooling stations



Version with Position Lock



Dimensions, Order Instructions for cassettes with Position Lock

for size	Dimension (mm)			Holding torque (N)	Order No.
	Øa	b	h		
12	–	–	–	–	–
15	25	41	19.0	200	by 20923
20	25	49	23.0	250	normally 20924
25	32	56	28.0	250	holding 20925
35	50	83	38.5	350	torque 20926
45	63	101	48.0	750	20927

Dimensions in mm

Accessories

Cap Plugs

Cap Plugs

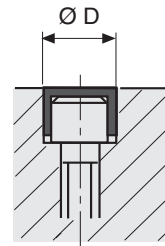
Material:
wear-free plastic, oil- and ageing resistant

Installation:

- place cap plug in screw recesses.
- position plastic plate on top and drive caps in evenly.
- remove any protruding burr.

Ordering information:

When ordering single or double rails, the required number of caps will be included in the scope of supply.



Dimensions (mm), Order Instructions for Cap Plugs

for size	Dimension		Order No.
	Zyl. Schr. DIN 912	ØD	
12	M3	6	20997
15	M4	8	20524
20	M5	10	20525
25	M6	11	20526
35	M8	15	20841
45	M10	18	20842

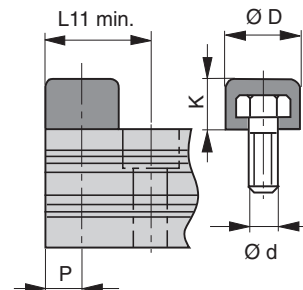
Limit Stop Screw

Limit Stop Screw

The sole purpose of the limit stop screws is to prevent removal of the cassette. They are screwed in to the thread (option) of the guide rails, a rubber cap placed on top dampens the stop in each case but is unable to absorb the energy produced (resulting damage to the plastic wiper can occur).

For rail lengths where the initial mounting distance of the limit stop screw is less than the L11min, the drill pattern will move up one half of the standard bore length.

Material:
Chlorbutadien Rubber (Cr), black



Dimension (mm), Order Instructions for Limit Stop Screws

for size	Dimension					Order No.
	d	D	K	L11 min.	P	
12	M5	12	8	15	6	20998
15	M5	12	8	16	6	20527
20	M5	12	8	17	6	20527
25	M6	15	10	20.5	7.5	20528
35	M8	19	13	26.5	9.5	20529
45	M10	24	16	33	12	20844

Dimensions in mm

Technical Informations

General information

1. Features of the guide system

Aluminium roller guides consist of double rail and roller cassettes resp. individual rail and roller shoe.

Their special features are: light weight, small dimensions, and high speed of displacement. Aluminium roller guides are economical and universal handling components, which are corrosion-resistant and cost effective.

With aluminium roller guides the guide rails and cassettes are made of aluminium. The rollers are running in an antifrictional way on ground or drawn raceways from high alloy spring steel. The special O-arrangement of the running rollers guarantees high load capacity from whatever direction.

2. Size of the guide system

To select the right size, first the moments and forces acting on the bearing have to be determined.

Recommended safety

(with screws quality 8.8):

Thrust load: $S > 1.2$

Tensile load: $S > 2.5$

Moment load: $S > 4.0$

Generally the first decision has to be whether the guide system should be built with double rails and cassettes, or whether individual rails with roller shoes, are to be used. Hereby there are a number of variants.

3. Material

The basic body of ORIGA aluminium roller guides from HOERBIGER is made of aluminium.

The races consist of tough, high alloy spring or of non-corrosive steel.

By using an aluminium construction the moving mass is reduced, enabling light weight construction with low moving forces and reduced energy consumption.

Dimensions in mm

Nevertheless the integrated ORIGA system sustains high load rating and moment loads.

4. Operating temperature

ORIGA bearing elements from HOERBIGER can be operated within a temperature range from -20° up to $+100^{\circ}\text{C}$. For other temperatures please consult us.

5. Screwed connections

The units are fixed to the mating structure by the bore holes in the rails and the guides. Hereby the screw quality should be 8.8, washers DIN 433.

To secure the screwed connections we recommend you to use suitable locking means.

Tightening moments

Quality of the screw	Thread	Mom. [Nm]
8.8	M3	1.1
	M4	2.5
	M5	5.0
	M6	8.5
	M8	21.0
	M10	41.0
	M12	71.0

6. Wipers

The races of aluminium roller guides and linear guides are equipped with wipers against coarse environmental contamination.

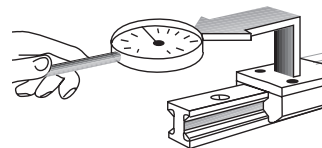
For rail recess covers see page 11.

7. Slide resistance, adjustment

7.1 Double rail and cassette

Aluminium roller guides are adjusted in such a way that the required stiffness under load is obtained. We recommend that you measure the slide resistance as shown below. However, before doing so the mating structure should be checked for dimensional accuracy and flatness.

The cassettes which are mounted on the rails are adjusted clearance – free ex works. This adjusting mode refers to the point on the rail where the cassette moves most smoothly. Adjustment is effected in the non-loaded condition. The indications on the table are referred to this condition.



Tolerances in the guide system and internal friction may cause an increase of the slide resistance when the adjusted cassette is moved along the stroke path.

All values without wipers.

Settings for the standard and rustproof versions

Description	Slide resistance [N]					
Size	12	15	20	25	35	45
Adjust. value	0.2	1.0	1.5	1.5	3.0	3.5
Max. value	0.5	3.0	4.5	3.0	9.0	10.5

Settings for the LOW COST version

Description	Slide resistance [N]					
Size	12	15	20	25	35	45
Adjust. value	0.2	0.5	1.0	1.5	2.0	2.5
Max. value	0.4	1.0	2.0	3.0	4.0	5.0

Technical Informations

General information

7.2 Double rail and roller cassette

For clearance setting first the screws of the cassette plate are slightly released, afterwards the threaded pin which is integrated in the longitudinal side of the cassette is set. Turning the threaded pin effects a displacement of the roller shoe in relation to the cassette plate.

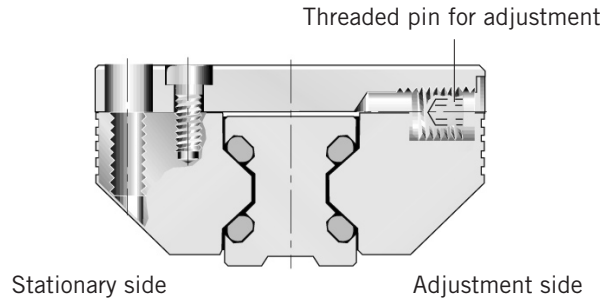
After tightening of the cassette plate the slide resistance can be checked. Afterwards the mating structure is fixed.

7.3 Single rail and roller shoes

When adjusting the assembly, first identify the stationary and the adjustable roller shoes. (see drawing 10.2) The roller shoes of the stationary side are aligned to the mating structure and fastened by all screws.

With the roller shoes of the stationary side, all fastening screws are slightly tightened. Clearance setting is effected in the same way as with the cassette.

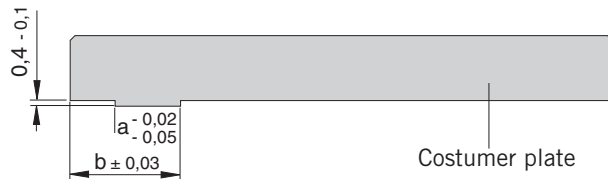
Principally clearance setting is effected in unloaded condition.



7.4 Centering groove on the stationary side

The roller shoes are provided with centering grooves for better alignment during mounting. To use these, centering shoulders according to the data given below, are required.

Size	Dimension	
	a	b
12	4.5	9.6
15	5.0	12.6
20	7.5	16.1
25	10.5	17.6
35	12.5	26.1
45	15.5	31.1



8. Running accuracy

The running accuracy is measured from the screw-on-surface of the cassette to the ideal straight line of stroke. It is 0.06 mm.

9. Contact and support surfaces

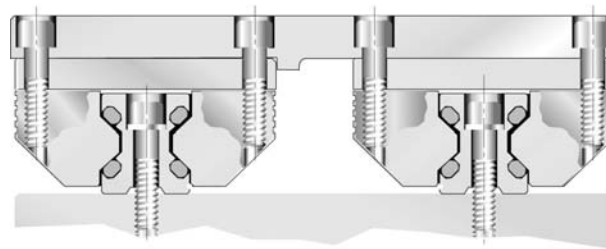
The contact and support surfaces exert a substantial influence on the function and precision of linear guides. Depending on the functional requirements of the system the mating structure must be machined with the corresponding degree of precision. Machining errors on the mating structure are added to the running errors of the guide system. In order to guarantee troublefree operation we recommend to a max. accumulated deviation of < 0.1 mm per running meter of the guide distance on the mating structure.

Dimensions in mm

10. Design hints

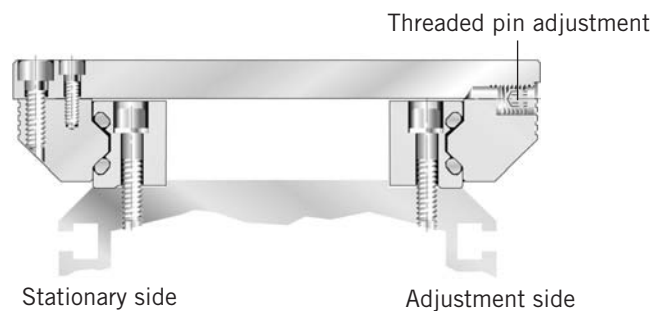
10.1 Double rail and cassette

With the double track arrangement, precise alignment in terms of parallelism and height is necessary.



10.2 Single rail and roller shoes

Aluminium roller guides consisting of single rails and roller shoes can be varied in the guide width. They are particularly suitable for assembly on profiled aluminium carriers, as their corrosion and temperature behaviour is homogenous.



Technical Informations

Mounting instructions

11. Mounting instructions

The usable load capacity is influenced by the connection between the guide elements and the mating structure.

11.1 Double rails and cassettes

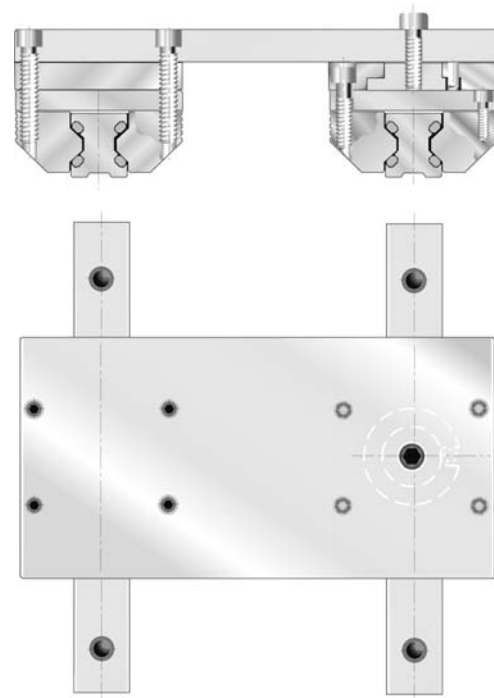
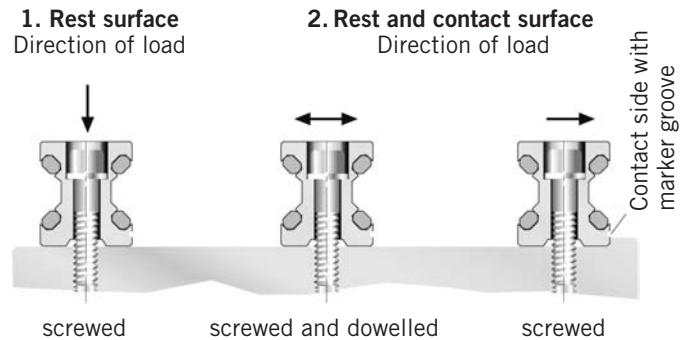
Depending on the load situation double rails should either be screwed or screwed and dowelled, and placed in grooves or against a shoulder. The rails rest against shoulders and are screwed or screwed and dowelled to the mating structure. After final checking of the linearity resp. parallelism the screws are tightened alternately from the center outwards to the given torque. Afterwards, the cassette should be moved over the total stroke distance, if the motion is uniform then the mounting process may be continued.

11.2 Stationary and movable rest side

With multitrack arrangement first define the a stationary and movable side of the guide. This way tolerances in parallelism can be best compensated.

With multitrack arrangements the movable side of the bearing is equipped with driver and locking device. The floating slider plate has a stationary and a movable side. The stationary side provides the guiding function, the movable side compensates tolerances in parallelism and height.

We recommend that the drive be placed at the stationary side as this side sustains the driving torque.



Technical Informations

Mounting instructions

11.3 Single rails and roller shoes

Where single rails and roller shoes are used the mating structure takes the function of the slider.

The guide rails are put against the contact shoulder and screwed resp. screwed and dowel-led. After final adjust-

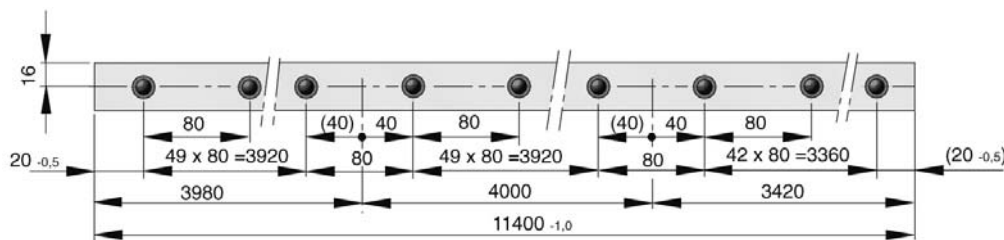
ment of linearity resp. parallelism the screws are tightened alternately starting from the center outwards. Afterwards the slider is moved along the guide path. When the movement is uniform you can proceed with mounting.

12. Coupling of guide rails

12.1 Spacing

Coupled rails with a length over $L = 4000$ mm are pieced together according to the HOERBIGER standard. Spacing according to the HOERBIGER standard guarantees a uniform bore shape over the whole guide and an optimum utilisation of the guide length.

Pitch according to HOERBIGER standard: e.g. GDL-FD35-11400



12.2 Mounting

Clean contact and mounting surfaces, then place the rails loosely on the guide path one behind the other with the correct sequence of the production numbers has to be kept. (e.g. ...1...2...3...4 etc.).

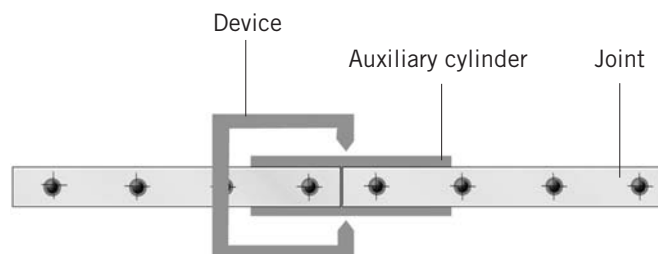
The marking groove on the lower surface of the rail must always be on the same side.

The complete guide path should be aligned without gaps and lightly fastened, ensuring that joints are precisely aligned.

The joints are to be aligned exactly. This is effected best by means of two auxiliary cylinders (length 200 mm). They are inserted into the raceway at the joints and clamped with a device.

For further mounting proceed as described under point 11.

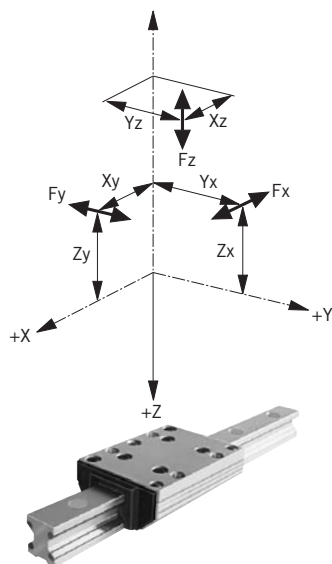
Size	Auxiliary cyl. \varnothing (mm)
12	11
15	11
20	14
25	16
35	27
45	35



Dimensions in mm

We will be pleased to calculate the size of aluminium roller guide you require!

Copy this page, enter the requested technical data and send this page to your local technical adviser or to one of the contact addresses on the last page of this brochure.



Loads, Forces, Lever arms

F_x [N]	=
Y_x [mm]	=
Z_x [mm]	=
F_y [N]	=
X_y [mm]	=
Z_y [mm]	=
F_z [N]	=
X_z [mm]	=
Y_z [mm]	=

Company	
Phone	
Telefax	
email	
Branch	
Department	
Name	
Date	

Order No.	
-----------	--

Technical data	
Stroke [mm]	
Mounting position	vertical <input type="checkbox"/> horizontal <input type="checkbox"/> angle <input type="checkbox"/>
Speed [m/s]	
Acceleration [m/s ²]	
Lifetime (desired) L [km]	
Carrying length A [mm] *	
Carrying width B [mm] **	

* The distance from centre to centre of two cassettes / pairs of roller shoes on a rail
 ** With multi-track arrangement distance of the rails

Sketch

Environment: (Dirt. Humidity ...)

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Various Directives have been issued by the EU Commission in the course of the unification of the single European market; the following Directives are in part of significance for ORIGA products:

- Simple pressure vessels (87/404/EWG, amended by 90/488/EWG and 93/68/EWG)
- Low-voltage electrical equipment (73/23/EWG, amended by 93/68/EWG)
- Machinery Directive (89/392/EWG, amended by 91/368/EWG, 93/44/EWG and 98/37/EG)
- Pressure Equipment Directive (97/23/EWG)
- Equipment and protective systems intended for use in potentially explosive atmospheres (ATEX Directive, 94/9/EG)
- Electromagnetic Compatibility Directive (EMV Directive, 89/336/EWG, amended by 92/31/EWG)

If a product comes within the scope of application of one of these Guidelines, then an EU Declaration of Conformity with CE mark (CE for Communauté Européenne) is required. This CE marking does not represent a quality feature but verifies that the conformity assessment procedure specified has been concluded successfully and the protective requirements of the relevant EU Directives have been observed.

Products which do not come under any of the above mentioned Directives may not bear the CE mark nor may any manufacturer's declaration according to the EU Machinery Directive or Declaration of Conformity be issued for these products.

If a product may not be CE marked according to the Machinery Directive, it must however be marked if it comes within the scope of application of any other Directive.

The following harmonized standards are applied in the design of ORIGA components and systems:

- DIN EN ISO 12100 Safety of machinery
- DIN EN 60204.1 Electrical equipment of machines
- DIN EN 983 Safety requirements for fluid power systems and their components

The following Directives are of particular significance to HOERBIGER:

- ORIGA products in potentially explosive atmospheres, to which the above mentioned ATEX Directive applies, are treated according to the Directive and CE and EX marked.
- According to the Machinery Directive, ORIGA products are mainly components for installation in machines and therefore do not require an EU Declaration of Conformity with CE mark. HOERBIGER-ORIGA issues a manufacturer's declaration according to the Machinery Directive for these components. This declaration corresponds to a great extent to the Declaration of Conformity with the comment that commissioning is only permitted if the machine or system conforms to the Directives. This manufacturer's declaration impacts neither our product liability based on the product liability law nor warranty assurances according to our General Terms of Sale and Delivery. Neither does the manufacturer's declaration affect our quality assurance measures according to our Quality Management Manual nor our quality certification according to ISO 9001.
- According to the Pressure Equipment Directive, ORIGA products are components of low hazard potential, thus most of the products do not come under this Directive. The exceptions to this are maintenance equipment from a certain pressure/volume level onwards. These components are treated according to the Directive if required and bear the CE mark.

ORIGA products are excluded from the following EU Guidelines:

- End-of-life vehicles (2000/53/EG).
- Waste Electronic and Electrical equipment (WEEE, 2002/96/EG) and Restriction on Hazardous Substances (RoHS, 2002/95/EG).
- Pressure Equipment Directive (97/23/EWG) with the above mentioned exceptions.

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- AE** HOERBIGER SERVICE MIDDLE EAST FZE • Jebel Ali Free • P.O. Box 07153 • Dubai, United Arab Emirates
Tel. +971 +4 8814567 • Fax +971 +4 8817123 • e-mail: office@hoerbiger.ae
- AT** HOERBIGER-ORIGA Pneumatik GmbH • Dr. Alexander-Schärf-Straße 12 • AT-2700 Wiener Neustadt
Tel. +43 +2622 26071-269 • Fax +43 +2622 26071-266 • e-mail: info-hoat-sales.pn@hoerbiger.com
- AU** HOERBIGER AUSTRALIA PTY.LTD. • 21 David Street • AU-3175 Dandenong, Victoria
Tel. +61 (0)3 9793 9488 • Fax +61 (0)3 9706 8152 • e-mail: info-hoau-sales@hoerbiger.com
- CH** HOERBIGER-ORIGA AG • Industriestr. 30 • CH-8112 Otelfingen (Zürich)
Tel. +41 (0)1 846 6860 • Fax +41 (0)1 846 6870 • e-mail: info-hoch-sales@hoerbiger.com
- CN** HOERBIGER (WUXI) AUTOMATION TECHNOLOGY CO., LTD. • A2-A, Machinery & Electronics Park • Wuxi National High-Tech Zone
Wuxi 214028, China • Tel. +86 510 8520 3468 • Fax +86 510 8520 3498 • e-mail: info-wuxi@hoerbiger.com
- FR** HOERBIGER-ORIGA SAS • 9 Avenue du Québec • FR-91978 Courtaboeuf Cedex
Tel. +33 (0)1 69 29 22 00 • Fax +33 (0)1 69 29 22 10 • e-mail: info-hofr-sales@hoerbiger.com
- GB** HOERBIGER-ORIGA Ltd. • Unit 12 Brunel Court • Waterwells Business Park • Gloucester GL2 2AL, UK
Tel. +44 8700 600655 • Fax +44 8700 600656 • e-mail: info-hogb-sales@hoerbiger.com
- IT** HOERBIGER-ORIGA S.R.L. • Via Martiri della Libertà 4/6 • IT-20060 Liscate (MI)
Tel. +39 02 95 35 03 07 • Fax +39 02 95 35 05 13 • e-mail: info-hoit-sales@hoerbiger.com
- NL** HOERBIGER-ORIGA B.V. • Plaza 11C • NL-4782 SL Moerdijk
Tel. +31 168 356 600 • Fax +31 168 356 601 • e-mail: info-honl-sales@hoerbiger.com
- NO** HOERBIGER-ORIGA AS • Postboks 2173 Strømsø • NO-3003 Drammen
Tel. +47 3 288 08 40 • Fax +47 32 82 83 20 • e-mail: info-hose-sales@hoerbiger.com
- MY** HOERBIGER-ORIGA Sdn Bhd • No. 10 & 12 Lorong IKS Juru 3 • MY-14100 Juru, Simpang Ampat, Penang
Tel. +60 (0)4 508 10 11 • Fax +60 (0)4 508 21 22 • e-mail: info-hosg-sales@hoerbiger.com
- SE** HOERBIGER-ORIGA AB • Kungsgatan 14, Box 67 • SE-73622 Kungsör
Tel. +46 227 411 00 • Fax +46 227 411 29 • e-mail: info-hose-sales@hoerbiger.com
- US** HOERBIGER-ORIGA Corporation • 100 West Lake Drive • IL-60139 Glendale Heights, Illinois, USA
Tel. +1 630 871 830-0 • Fax +1 630 871 1515 • e-mail: info-hous-sales@hoerbiger.com

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HOERBIGER-ORIGA GmbH
Industriestr. 8
70794 Filderstadt, Deutschland
Tel. +49 (0)7158 1703-0
Fax +49 (0)7158 64870
info-hode-sales@hoerbiger.com

Hotline – DE:
01805 432 666

www.hoerbiger.com