

Accessories

Cap Plugs

Cap Plugs

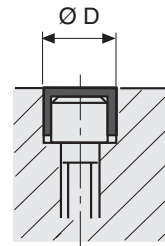
Material:
wear-free plastic, oil- and ageing resistant

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 |

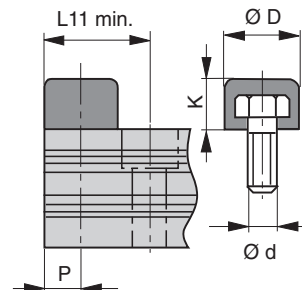
Limit Stop Screw

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.

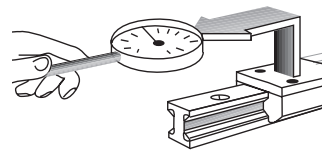
For rail recess covers see page 11.

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.

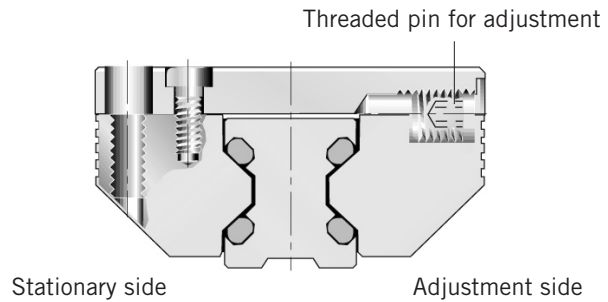
After tightening of the cassette plate the slide resistance can be checked. Afterwards the mating structure is fixed.

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.

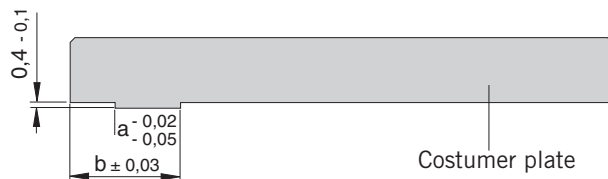
Principally clearance setting is effected in unloaded condition.



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

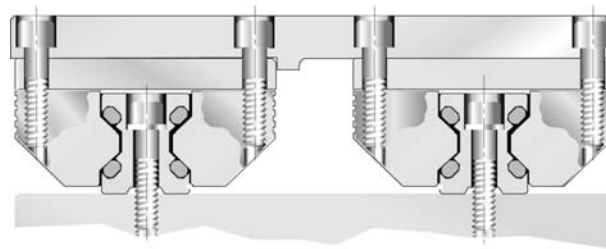
The contact and support surfaces exert a substantial influence on the function and precision of linear guides. Depending on the functional requirements of the system the mating structure must be machined with the corresponding degree of precision. Machining errors on the mating structure are added to 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

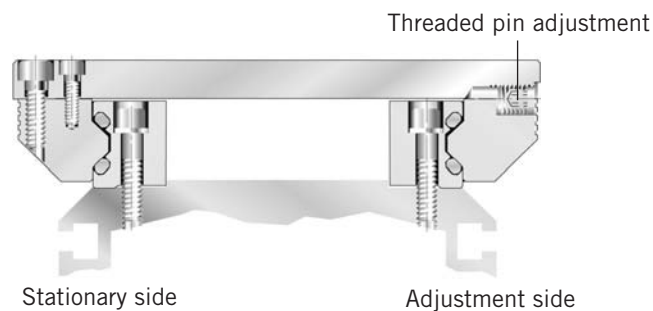
10.1 Double rail and cassette

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

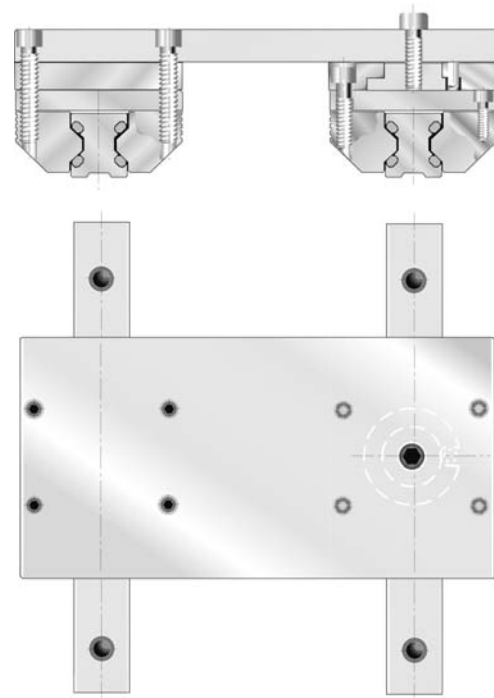
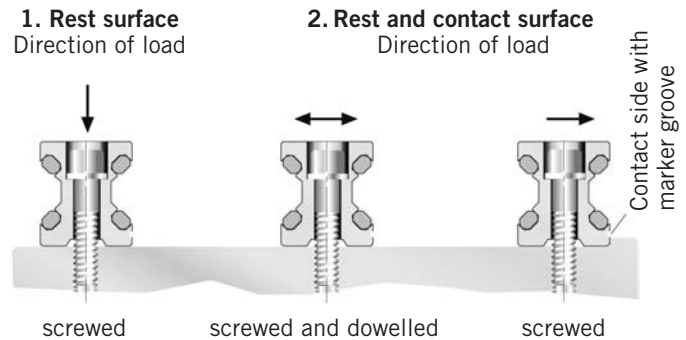
Depending on the load situation double rails should either be screwed or screwed and dowelled, and placed in grooves or against a shoulder. The rails rest against shoulders and are screwed or screwed and dowelled to the mating structure. After final checking of the linearity resp. parallelism the screws 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.



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

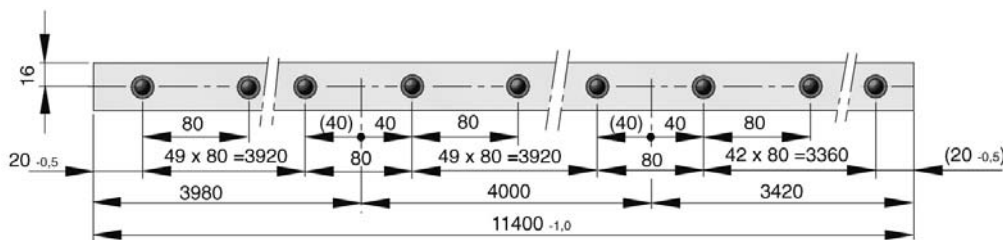
12.1 Spacing

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.

Technical Informations

Mounting instructions

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.).

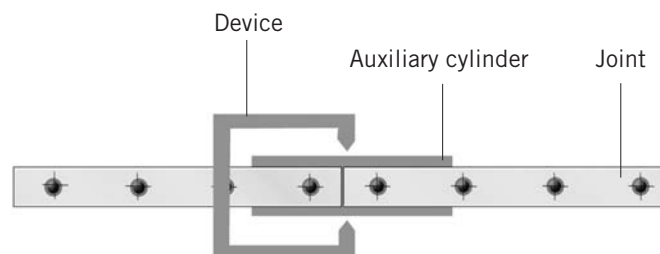
The marking groove on the lower surface of the rail must always be on the same side.

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.

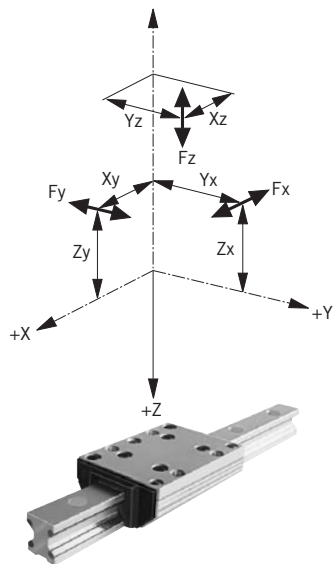
| Size | Auxiliary cyl. Ø (mm) |
|------|-----------------------|
| 12 | 11 |
| 15 | 11 |
| 20 | 14 |
| 25 | 16 |
| 35 | 27 |
| 45 | 35 |



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 ...) |
|-----------------------------------|
| |

Information on application

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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.