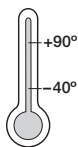




DryLin® T | Linear Guide System

DryLin® T linear guide systems were originally developed for applications in both automation and materials handling. The goal was to create a high performance, maintenance-free linear guide for use in the most diverse, even extreme environments.



DryLin® T

Technical Data

Sliding elements:	Maintenance-free
Material:	iglidur® J*
Max. surface speed:	15 m/s
Temperature range:	-40 °C to +90 °C

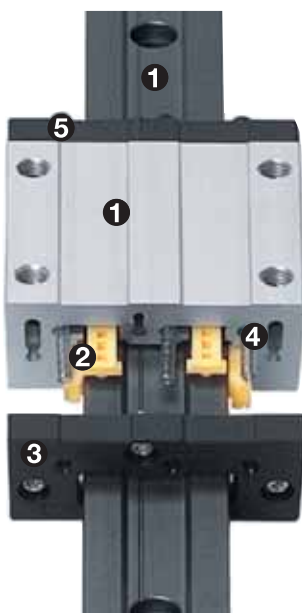
* Other materials upon request



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Fax +44 (0) 1604 - 677245



DryLin® linear guide system in a treatment machine



- ❶ Slide rails and base structure of the carriages manufactured from aluminium Al Mg Si 0.5
The rail is hard anodized, the aluminium carriage housing is clear anodized
- ❷ 6 sliding iglidur® J elements act as guide bearings, which are set in opposing pairs and act as three guide bearings altogether
- ❸ Each of the three guide bearings can be adjusted manually or automatically
- ❹ All steel parts are galvanized or stainless steel
- ❺ The end plate is solid plastic

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Valve machining produces an extreme environment

Technical Data

Guide rails	
Material	Aluminium, extruded section
Substance	Al Mg Si 0,5
Coating	Hard anodized aluminium, 50 µm
Hardness	500 HV
Sliding carriage	
Base structure	Aluminium, extruded section
Material	Al Mg Si 0,5
Coating	Anodized aluminium
Sliding elements	Maintenance-free plain bearing iglidur® J
Bolts, springs	Stainless steel, galvanized steel
Cover	Plastic
Max. surface speed	15 m/s
Temperature range	-40 °C to +90 °C



DryLin® T linear guide system in pneumatic doors of tool changers

Internet www.igus.co.uk
E-mail sales_uk@igus.co.uk



Special properties

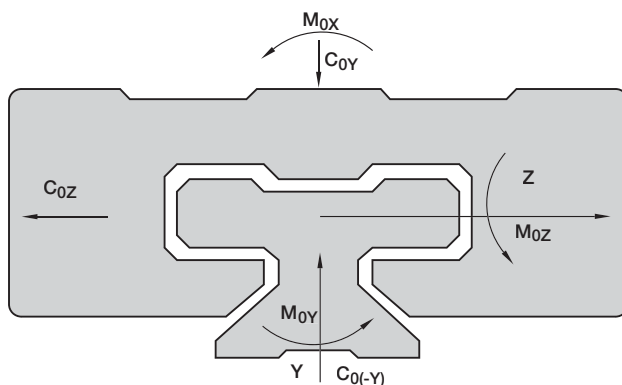
- With a low rate of inertia, high accelerations and short term extreme speeds up to 30 m/s are possible
- DryLin®T linear guide systems run dry. Dirt cannot settle in lubricants
- Recommended for use in food, medical, and clean room technologies, as no lubricants are present
- The corrosion resistance of DryLin® T means that it can also be used in wet environments
- High pressure washdown does not damage the system
- Vibration dampening and extremely quiet operation
- The aluminium rail provides good thermal dissipation. The aluminium only retains heat at continuously high speeds
- The combination of anodized aluminium and iglidur® J results in a low initial breakaway force
- DryLin® T is dimensionally interchangeable with standard ball bearing systems



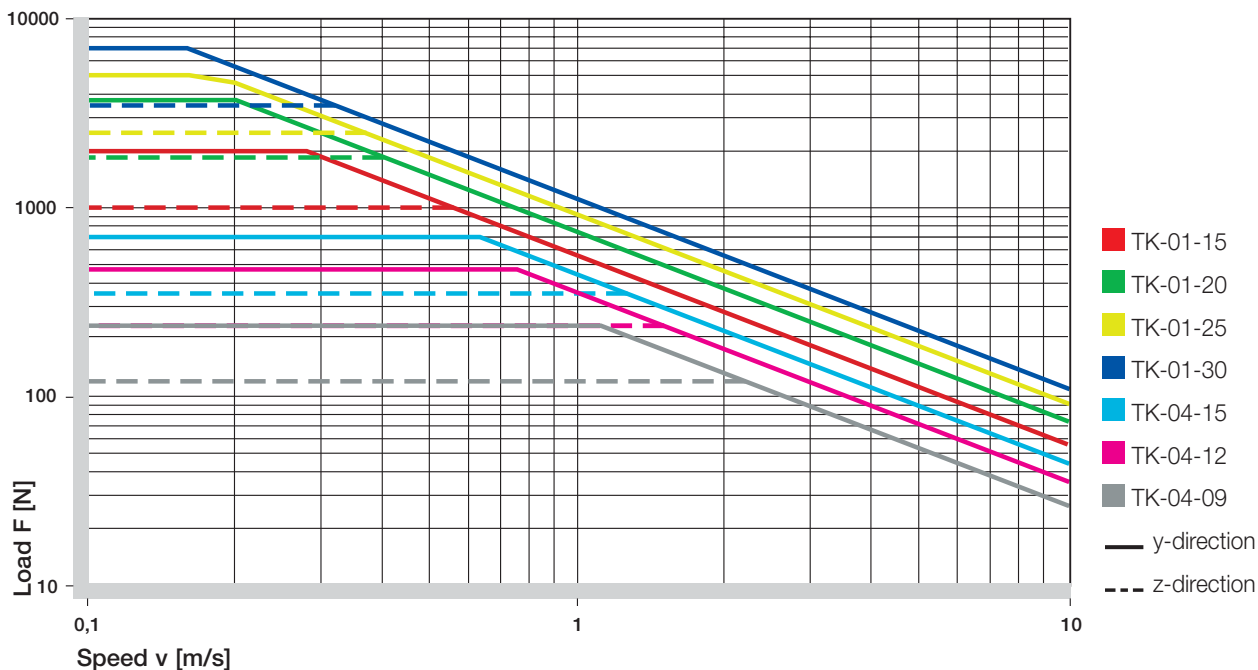
Picture 60.1: DryLin® T in a demanding packaging machine application

Type	C_{0Y} [kN]	$C_{0(-Y)}$ [kN]	C_{0Z} [kN]	M_{0X} [Nm]	M_{0Y} [Nm]	M_{0Z} [Nm]
04-09	0,48	0,48	0,24	3,4	1,8	1,8
04-12	0,96	0,96	0,48	9,2	4,4	4,4
04-15	1,4	1,4	0,7	17	8	8
01-15	4	4	2	32	25	25
01-20	7,4	7,4	3,7	85	45	45
01-25	10	10	5	125	65	65
01-30	14	14	7	200	100	100

Table 61.1: DryLin® T-01 – Permissible static load capacity



Graph 61.1: Designation of load directions



Graph 61.2: DryLin® T – Permissible dynamic load



DryLin® T | Adjusting and Installation



Installation notes

When designing systems with 2 parallel rails, one side must be used with floating bearings. For each orientation, there is a recommended fixed floating bearing solution. This installation method prevents binding or a locking of the guide when there are parallelism errors between the rails.

The floating bearing is created by the removal of the static sliding elements. The maximum compensation of parallelism errors between the mounted rails is 0.5 mm. In the installation, care must be taken that the floating bearing has equal play in both directions. You can see our recommended design of the fixed floating bearing system in the adjacent drawings.

The mounting surfaces for the rails and guide carriages should have a very flat surface (e.g. machined face), in order to prevent binding in the system. Variations in the mating surfaces can also be compensated up to a certain amount (0.5 mm) by a larger adjusted clearance. The clearance adjustment is only effective without load.

Please contact our technical experts if you have any questions on the engineering design and/or installation.

Floating bearings for linear slides

In the case of a system with two parallel guides, one side needs to be configured with floating bearings.

A suitable solution comprising fixed & floating bearings is available for every orientation, whether horizontal, vertical or lateral. This type of assembly prevents jamming and blockage on the guides resulting from discrepancies in parallelism. Floating bearings are created through a controlled extension of play in the direction of the expected parallelism error. This creates an additional degree of freedom on one side. During assembly, it must be ensured that the floating bearings exhibit a similar degree of play in both directions. The systems of fixed & floating bearings we recommend are shown in various related chapters.

The mating surfaces on the rails and carriages should be very flat (for instance, milled down) to prevent strains from occurring in the system.

Eccentric Forces

To ensure successful use of maintenance-free DryLin® linear bearings, it is necessary to follow certain recommendations:

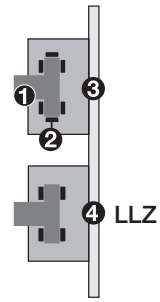
If the distance between the driving force point and the fixed bearings is more than twice the bearing spacing (2:1 rule), a static friction value of 0.25 can theoretically result in jamming on the guides. This principle applies regardless of the value of the load or drive force.

The friction product is always related to the fixed bearings. The greater the distance between the drive and guide bearings, the higher the degree of wear and required drive force.

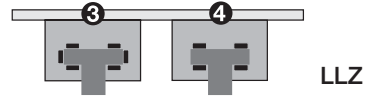
Failure to observe the 2:1 rule during use of linear plain bearings can result in uneven motion or even system seizure. Such situations can often be remedied with relatively simple modifications.

If you have any questions on design and/or assembly, please contact our application engineers.

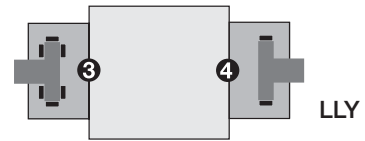
- 1 Rail
- 2 Sliding elements
- 3 Fixed bearing
- 4 Floating bearing LLZ or LLY



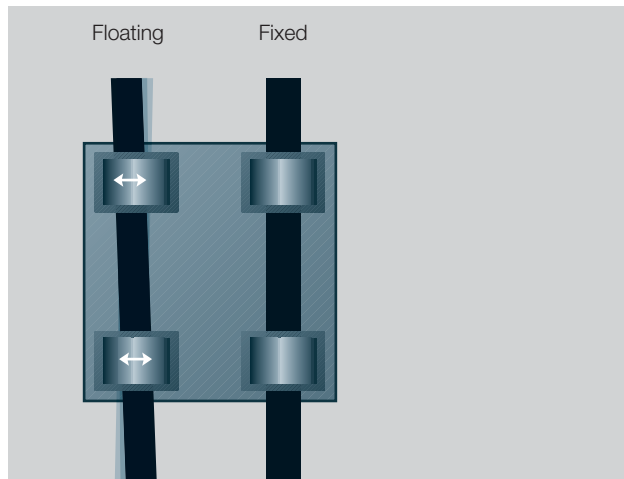
Lateral/vertical installation with floating bearing in the z-direction



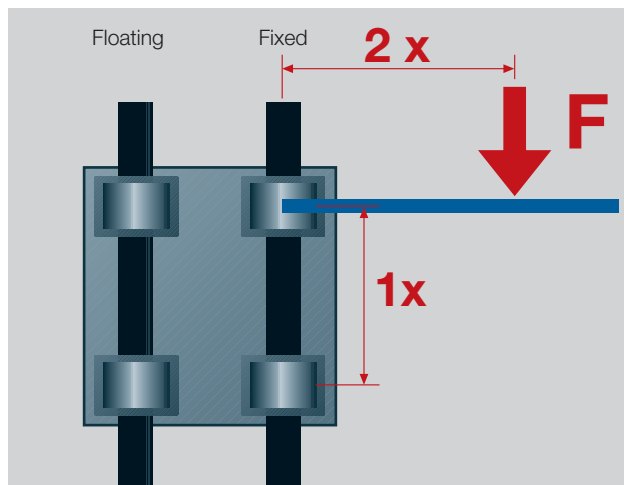
Horizontal installation with floating bearing in the z-direction



Horizontal installation with lateral carriages, with floating bearing in the y-direction



Automatic compensation of parallelism errors



The 2:1 Rule

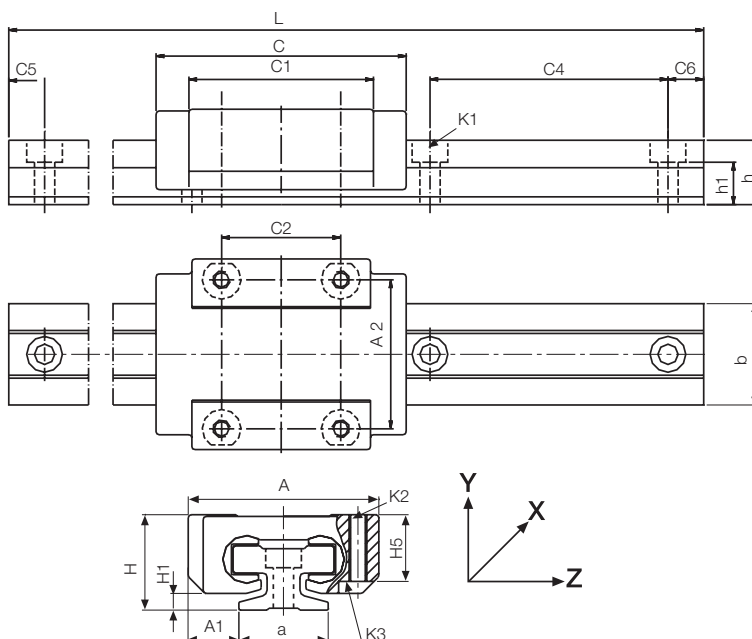
DryLin® T

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DryLin® T



- Maintenance-free, dry operation
- 3 sizes
- Cast zinc chromed carriage
- iglidur® J polymer sliding pads
- Hard anodized aluminium rails
- Small mounting height and width
- Resistant to corrosion
- Standard bore pattern symmetrical C5 = C6

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DryLin® T Miniature Rails

Part No.	Weight [kg/m]	L [mm]	a [mm]	C4 [mm]	C5 [mm]	C5 Max. [mm]	C6 [mm]	C6 Min. [mm]	C6 Max. [mm]	h [mm]	h1 [mm]	K1 for Screw DIN 912 [mm]	b [mm]	ly [mm²]	lz [mm²]	Wby [mm³]	Wbz [mm³]
TS-04-09	0,11	2000	9	20	5	14,5	5	14,5	6,3	4,6	M 2	9,6	252	169	52	49	
TS-04-12	0,20	2000	12	25	5	17,0	5	17,0	8,6	5,9	M 3	13	856	574	132	120	
TS-04-15	0,33	3000	15	40	10	29,5	10	29,5	10,8	7,0	M 3	17	2420	1410	285	239	

Order example: TS-04-09, 200 for a miniature rail TS-04-09 of 0.2 m length
 For rails without mounting holes, please use part number suffix "without mounting hole"

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DryLin® T Miniature Carriages

Part No.	Weight [g]	H [mm]	A [mm]	C [mm]	A1 [mm]	A2 [mm]	C1 [mm]	C2 [mm]	H1 [mm]	H5 [mm]	K2 Thread	Torque Max. [Nm]	K3 for Screw DIN 912
TW-04-09	17	±0,2	-0,2	±0,3	±0,35				±0,35				(M 2)
TW-04-12	34												M 2 (M 3)
TW-04-15	61												M 2 (M 3)

Order examples: TW-04-09 for a miniature carriage
 TW-04-09, LLy for a miniature carriage with floating bearing in y-direction
 TW-04-09, LLz for a miniature carriage with floating bearing in z-direction

DryLin® TK-04 Complete System



Structure – part no.

TK	-04	-15	-2	,500
----	-----	-----	----	------

- Length of rail (mm)
- Number of carriages
- Size
- Type
- Complete set

This order example (TK-04-15-2, 500) corresponds to a complete DryLin® T miniature system of size 15 with 2 carriages 500 mm rail length.
 Order TK-04-15-2, 500, LLy for a complete system with floating bearing in y-direction.

Internet www.igus.co.uk
 E-mail sales_uk@igus.co.uk