

**DryLin® T Linear Guide System
Maintenance-Free, Adjustable,
and Quiet**

DryLin® T Selection Guide



Series TW-01-XX Adjustable clearance

- Pre-set from factory for optimal standard clearance
- Clearance can be reduced for higher precision requirements
- Clearance can be increased to compensate for poor mounting surface tolerances



Series TWA-01-XX Automatic

- Clearance automatically adjusts
- Maintains better precision over lifetime vs. TW-01 version



Series TW-HKA Manual Hand Clamp

- Allows a simple hand-clamp function for light-duty applications
- Not recommended for vertical applications



Series TW-02-XX Heavy Duty

- Better for aggressive and heavy industrial environments due to metal end caps
- Ideal for applications containing weld splatter, dirt, wood chips, etc.
- Same loading as Series TW-01



Miniature

- Lightweight
- Ideal for tight design constraints
- Cost-effective



Series TWBM Heavy-Duty Clamps

- Offer higher clamping force than TW-HKA
- Holding forces up to 112 lbs

Temperature

Maximum Load

-40°F to +194°F
(-40°C to +90°C)

From
900 lbs (4000 N)
to
3140 lbs (14,000 N)

-40°F to +194°F
(-40°C to +90°C)

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3140 lbs (14,000 N)

-40°F to +194°F
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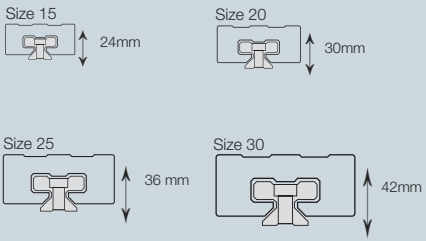
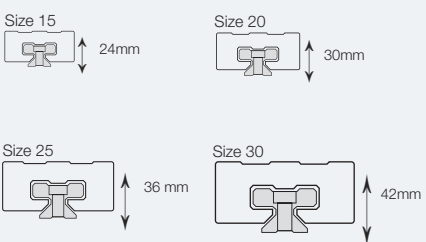
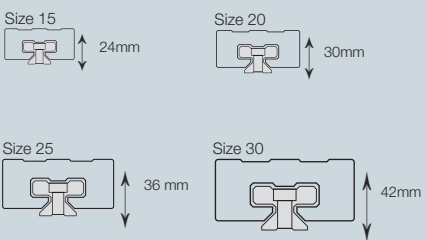
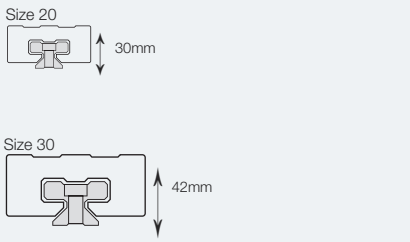
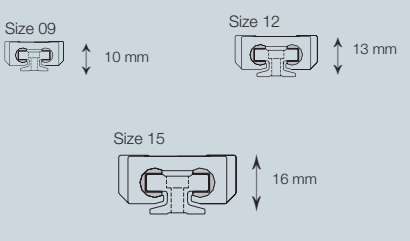
From
900 lbs (4000 N)
to
3140 lbs (14,000 N)

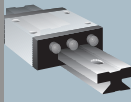
-40°F to +194°F
(-40°C to +90°C)

From
108 lbs (480 N)
to
315 lbs (1,400 N)

-40°F to +194°F
(-40°C to +90°C)

NA

| Maximum Speed | Maximum Rail Length | Size Range | Rail Material | Carriage Material |
|-----------------|----------------------------|--|------------------------|---|
| 49 fps (15 m/s) | 12 ft (4m upon request) |  | Hard-Anodized Aluminum | Plastic liners Aluminum carriages Stainless steel fasteners |
| 49 fps (15 m/s) | 12 ft (4m upon request) |  | Hard-Anodized Aluminum | Plastic liners Aluminum carriages Stainless steel fasteners |
| 49 fps (15 m/s) | 12 ft (4m upon request) |  | Hard-Anodized Aluminum | Plastic liners Aluminum carriages Stainless steel fasteners |
| 49 fps (15 m/s) | 12 ft (4m upon request) |  | Hard-Anodized Aluminum | Plastic liners Anodized Aluminum |
| 49 fps (15 m/s) | 6.56 ft (2000 mm) |  | Hard-Anodized Aluminum | Plastic liners Chromated zinc carriage |
| NA | NA | | Hard-Anodized Aluminum | Anodized Aluminum |



DryLin® T Linear Guide Systems

DryLin® T Linear Guide Systems

Telephone 1-800-521-2747
Fax 1-401-438-7270

Internet: <http://www.igus.com>
email: sales@igus.com
QuickSpec: <http://www.igus.com/drylin-quickspec>

48.4

Technical Data

Sliding elements:

Self-lubricating polymer

Material:

iglide® J*

Max. surface speed:

49 fps (15 m/s)

Temperature range:

-40° F to +194°F

(-40 °C to +90 °C)

* Other materials upon request

Special Features



Cleanroom certified - IPA Fraunhofer



ESD compatible (electrostatic discharge)



Free of toxins - RoHS 2002/95/EC



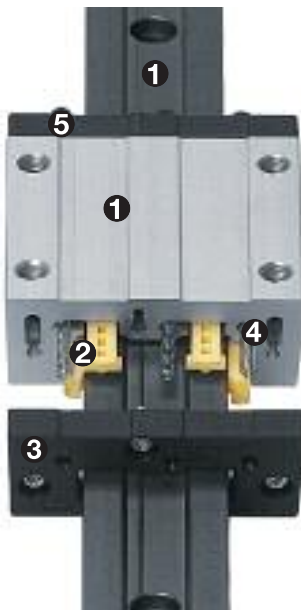
DryLin® linear guide system in a treatment machine



Valve machining produces an extreme environment



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



- ❶ The rail is hard anodized, the aluminum carriage housing is clear anodized, or chromated zinc (mini series)
- ❷ 6 sliding iglide® J elements act as guide bearings
- ❸ Clearance can be adjusted manually or automatically (depending on series)
- ❹ All steel parts are galvanized or stainless steel
- ❺ The end plate is solid plastic with an optional aluminum - HD carriage option

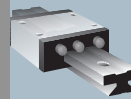
Technical Data

Guide Rails

| | |
|-----------|---------------------------------------|
| Material | Aluminum, extruded |
| Substance | 6063-T6 or 6060-T66 (Al Mg Si 0.5) |
| Coating | Hard-anodized aluminum, .002" (50 µm) |
| Hardness | 500 HV |

Sliding Carriages

| | |
|--------------------|---|
| Base Structure | Aluminum, extruded section (TK01/TKA/TKC1), Zinc (TK04) |
| Material | 6060-T66 (Al Mg Si 0.5) |
| Coating | Clear Anodized |
| Sliding Elements | iglide® J, maintenance-free, plain bearing material |
| Bolts | Stainless steel |
| Springs | Stainless steel |
| Cover | Plastic or aluminum (HD version) |
| Max. Surface Speed | 49 ft/s (15 m/s) |
| Temperature Range | -40°F to 194°F (-40°C to +90°C) |



Features

- With low inertia rates, high accelerations and speeds up to 49 fps (15 m/s) are possible
- Oil and maintenance-free
- Ideal for use in lab, food-processing, and packaging machinery
- Excellent corrosion resistance
- Dimensionally interchangeable with common linear ball bearings
- Excellent in dirty environments without the need of wipers or seals

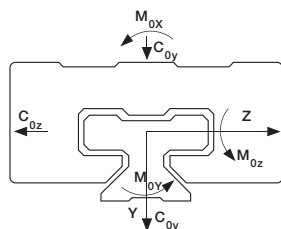


DryLin® T in a demanding packaging machine application

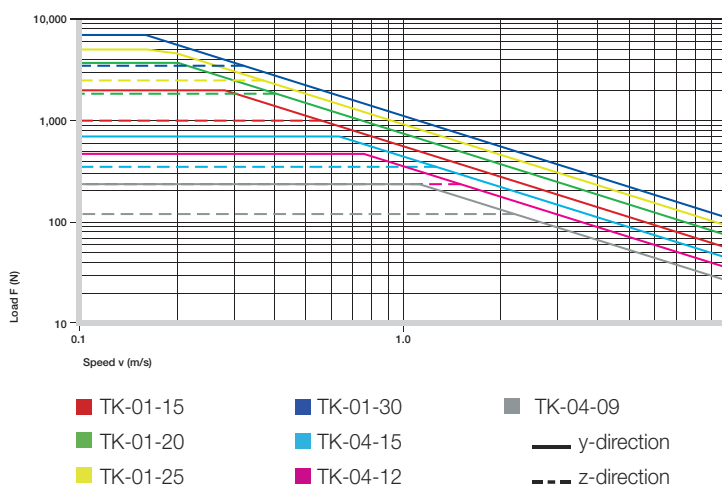
DryLin® T Linear Guide Systems

DryLin® T - Load / Speed Capacity

DryLin® T Linear Guide Systems can hold high static loads because of large surface areas. The maximum load in the y-direction is higher than in the z-direction, since the bearing surface is doubled in the y-direction. With a low rate of inertia, high accelerations and short term extreme speeds up to 49 ft/s (15 m/s) are possible.



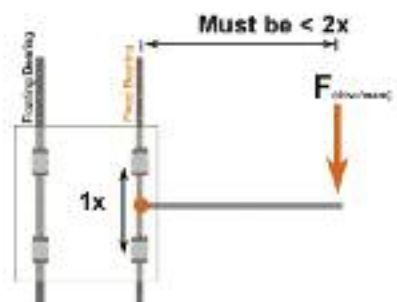
Designation of load directions



| Type | C _{0y} | | C _{0(-y)} | | C _{0z} | | M _{0x} | | M _{0y} | | M _{0z} | |
|-------|-----------------|------|--------------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|
| | lbs | (kN) | lbs | (kN) | lbs | (kN) | ft lbs | (Nm) | ft lbs | (Nm) | ft lbs | (Nm) |
| 01-15 | 900 | 4 | 900 | 4 | 450 | 2 | 24 | 32 | 18 | 25 | 18 | 25 |
| 01-20 | 1665 | 7.4 | 1665 | 7.4 | 833 | 3.7 | 62 | 85 | 32 | 45 | 32 | 45 |
| 01-25 | 2250 | 10 | 2250 | 10 | 1125 | 5 | 92 | 125 | 48 | 65 | 48 | 65 |
| 01-30 | 3140 | 14 | 3140 | 14 | 1570 | 7 | 148 | 200 | 74 | 100 | 74 | 100 |
| 04-09 | 108 | .48 | 108 | .48 | 54 | .24 | 2.5 | 3.4 | 1.3 | 1.8 | 1.3 | 1.8 |
| 04-12 | 215 | .96 | 215 | .96 | 108 | .48 | 6.8 | 9.2 | 3.2 | 4.4 | 3.2 | 4.4 |
| 04-15 | 315 | 1.4 | 315 | 1.4 | 157 | 0.7 | 12.5 | 17 | 6.0 | 8 | 6.0 | 8 |

Table 20.1: DryLin® T permissible static load capacity

Eccentric Forces



2:1 Rule = permissible distances of the applied forces

The 2:1 Rule

When using linear plain bearings it is important to ensure that the acting forces follow the 2:1 Rule (see drawing). If either the load or the drive force (F) is greater than twice the bearing length (1X), then a binding or interrupted motion may occur.

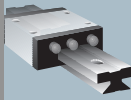
If the location of the drive force or load cannot be changed, simply increase the distance between the bearings, or create a counterbalance to move the center-of-gravity back within the 2 to 1 ratio.



Online Lifetime Calculation
www.igus.com

PDF: www.igus.com/drylin-pdfs
CAD: www.igus.com/drylin-CAD
RoHS info: www.igus.com/RoHS



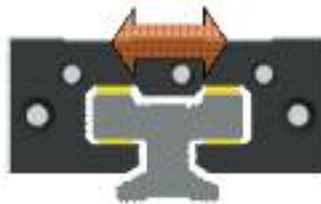


DryLin® T - Floating Systems

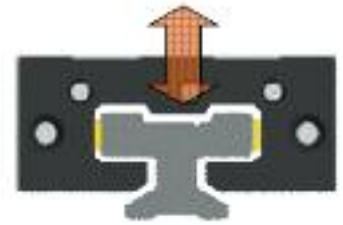
Maximum float = .04" (1 mm)



Standard Version



Horizontal Float "LLZ"



Vertical Float "LLY"

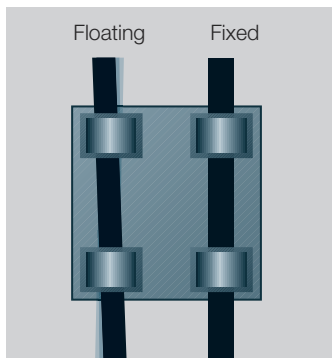
| Part-No. Standard | Part-No. Floating Horizontal | Part No. Floating Vertical |
|----------------------|---------------------------------|-------------------------------|
| TW-01-15 | TW-01-15HF | TW-01-15VF |
| TW-01-20 | TW-01-20HF | TW-01-20VF |
| TW-01-25 | TW-01-25HF | TW-01-25VF |
| TW-01-30 | TW-01-30HF | TW-01-30VF |

DryLin® T - Fixed and Floating Bearing Mounting Instructions

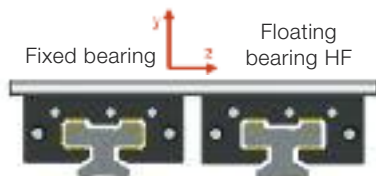
When using systems with 2 parallel rails, one side must be designated as the "fixed" rail, and the opposite side the "floating" rail.

Why use floating bearings?

- promotes smooth gliding performance and maximizes bearing life
- prevents binding caused by parallelism and angle errors
- decreases necessary drive force and wear by minimizing friction-forces
- Enhances the precision of the system over the bearings' lifetime.
- Reduce assembly time and cost



Automatic compensation of parallelism errors



Installation variation horizontal with floating bearing in the Z-direction

Fixed Bearings

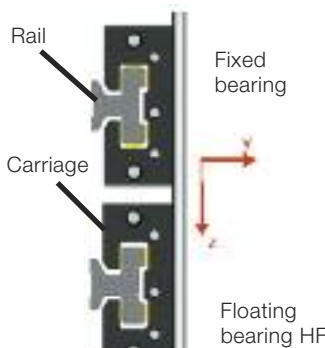
The "fixed" bearing rail should be positioned closest to the drive force. This rail will determine the precision of the system; no system should contain more than two "fixed" bearings.

Floating/Self-Aligning Bearings

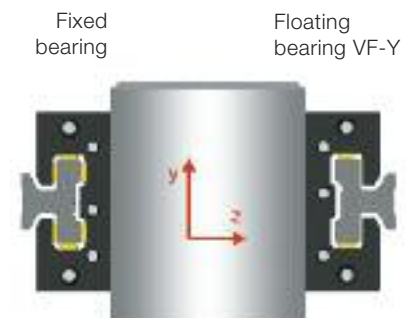
The "floating" rail should be the rail located furthest from the drive force. It is to act only as a guide, and will compensate for any misalignments or angle errors in the system ensuring proper functionality.

Mounting Surfaces

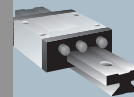
The mounting surfaces for rails and bearings should have a very flat surface (e.g milled surface) in order to enhance performance. Variations in these surfaces may be compensated for by using floating bearings.



Installation variation lateral with floating bearing in the X-direction



Horizontal mounting version with floating bearing in the Y-direction and lateral mounting carriage



Cleanroom Suitability and ESD Compatibility of DryLin®

Linear Guide Systems by igus® GmbH

All DryLin® guide systems are clearly qualified for clean room applications. The differentiation between the various clean room classes is only dependent on load and speed of the application. The combination of iglide® J and hard anodized aluminum is classified as level 1 in the ESD compatibility according to SEMI E78-0998 (Highest rank).



The measurement results of the ESD compatibility according to SEMI E78-0998 show that the linear guide system DryLin® NK-02-40-02 can be classified as “level 1” (Highest rank). See Fraunhofer IPA Report No.: IG 0308-295 73.

The following DryLin® guide systems by igus® were examined: N40, W10, T25 and T30.
See below for detailed results.

Linear guide system DryLin® TK-10-30-01:

“For the linear guide system DryLin® TK-10-30-01 by igus®, it is possible, on the calculations of the likelihood of violation of threshold values of the detection sizes 0.2 µm, 0.3 µm, 0.5 µm, and 5 µm with motion speed of $v = 0.1$ m/s, to clearly derive suitability for clean rooms classified as ISO Class 3 according to DIN EN ISO 14644-1.”

Linear guide system DryLin® NK-02-40-02:

“For the linear guide system DryLin® NK-02-40-02 by igus®, it is possible, on the calculations of the likelihood of violation of threshold values of the detection sizes 0.2 µm, 0.3 µm, 0.5 µm, and 5 µm with motion speed of $v = 1$ m/s, to clearly derive suitability for clean rooms classified as ISO Class 6 according to DIN EN ISO 14644-1.”

Linear guide system DryLin® TK-01-25-02:

“For the linear guide system DryLin® TK-01-25-02 by igus®, it is possible, on the calculations of the likelihood of violation of threshold values of the detection sizes 0.2 µm, 0.3 µm, 0.5 µm, and 5 µm with motion speed of $v = 1$ m/s, to clearly derive suitability for clean rooms classified as ISO Class 5 according to DIN EN ISO 14644-1.”

The measurement results of the ESD compatibility according to SEMI E78-0998 show that the linear guide system DryLin® TK-01-25-02 can be classified as “level 1” (Highest rank).

Linear guide system DryLin® WK-10-40-15-01:

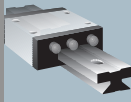
“For the linear guide system DryLin® WK-10-40-15-01 by igus®, it is possible, on the calculations of the likelihood of violation of threshold values of the detection sizes 0.2 µm, 0.3 µm, 0.5 µm, and 5 µm with motion speed of $v = 1$ m/s, to clearly derive suitability for clean rooms classified as ISO Class 6 according to DIN EN ISO 14644-1.”

The measurement results of the ESD compatibility according to SEMI E78-0998 show that the linear guide system DryLin® WK-10-40-15-01 can be classified as “level 1” (Highest rank).

See Fraunhofer IPA Report No.: IG 0308-295 74.

PDF: www.igus.com/drylin-pdfs
CAD: www.igus.com/drylin-CAD
RoHS info: www.igus.com/RoHS



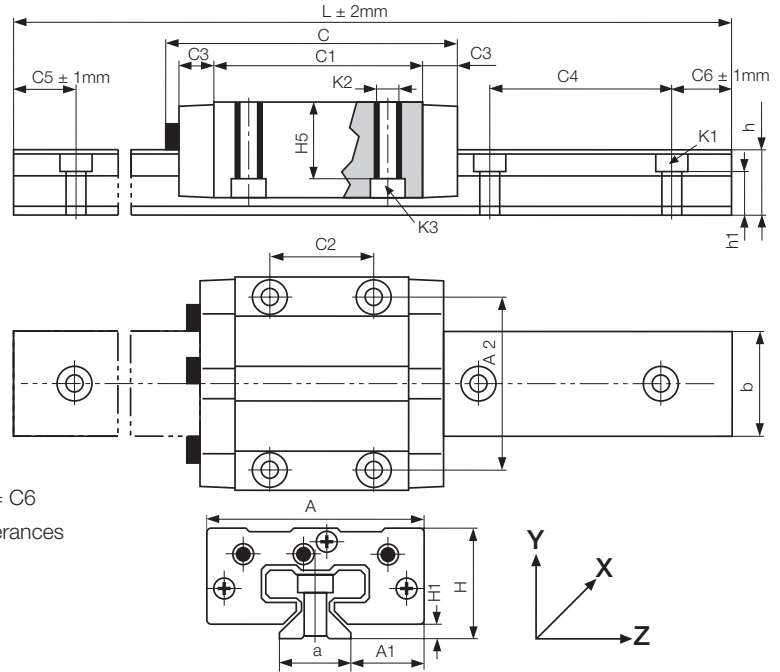


DryLin® T Linear Guide Systems - Adjustable Clearance

DryLin® T Linear Guide Systems

Telephone 1-800-521-2747
1-401-438-7270
Fax

Internet: <http://www.igus.com>
email: sales@igus.com
QuickSpec: <http://www.igus.com/drylin-quickspec>



- Adjustable clearance
- Maintenance-free, dry operation
- Corrosion resistant
- Hard anodized aluminum rails (6063-T6)
- Clear anodized aluminum carriage
- Standard bore pattern symmetrical for rail, C5 = C6
- No charge for rails cut to standard C5 + C6 tolerances

DryLin® T guide rails

| Part No. | Weight (kg/m) | L max. (mm) | a -0.2 (mm) | C4 (mm) | C5 | | C6 | | h | h1 | K1 for Screw DIN 912 | b (mm) | ly (mm ²) | lz (mm ²) | Wby (mm ²) | Wbz (mm ²) |
|----------|------------------|-------------------|-------------------|------------|--------------|--------------|--------------|--------------|------|------|----------------------------|-----------|--------------------------|--------------------------|---------------------------|---------------------------|
| | | | | | min. (mm) | max. (mm) | min. (mm) | max. (mm) | | | | | | | | |
| TS-01-15 | 0.6 | 3650 | 15 | 60 | 20 | 49 | 20 | 49 | 15.5 | 10.0 | M 4 | 22 | 6440 | 4290 | 585 | 488 |
| TS-01-20 | 1.0 | 3650 | 20 | 60 | 20 | 49 | 20 | 49 | 19.0 | 12.3 | M 5 | 31 | 22570 | 11520 | 1456 | 1067 |
| TS-01-25 | 1.3 | 3650 | 23 | 60 | 20 | 49 | 20 | 49 | 21.5 | 13.8 | M 6 | 34 | 34700 | 19300 | 2041 | 1608 |
| TS-01-30 | 1.9 | 3650 | 28 | 80 | 20 | 59 | 20 | 59 | 26.0 | 15.8 | M 8 | 40 | 70040 | 40780 | 3502 | 2832 |

Order example: TS-01-15, 2000 for a guide rail TS-01-15 of 2 m length

For rails without mounting holes, please use part number suffix "S"

*4000 mm length available upon request

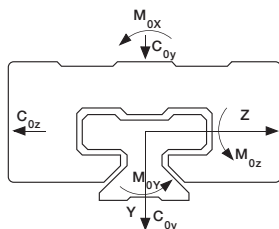
DryLin® T carriages

| Part No. | Weight (kg) | H ±0.35 (mm) | A (mm) | C (mm) | A1 | | C1 (mm) | C2 (mm) | C3 (mm) | H1 ±0.35 (mm) | H5 (mm) | K2 Thread | Max. Screw Torque (Nm) | K3 for Screw DIN 912 |
|----------|----------------|--------------------|-----------|-----------|---------------|------|------------|------------|------------|---------------------|------------|--------------|---------------------------------|----------------------------|
| | | | | | ±0.35 (mm) | (mm) | | | | | | | | |
| TW-01-15 | 0.11 | 24 | 47 | 68 | 16.0 | 38 | 50 | 30 | 9 | 4.0 | 16.0 | M 5 | 1.5 | M 4 |
| TW-01-20 | 0.19 | 30 | 63 | 81 | 21.5 | 53 | 61 | 40 | 10 | 5.0 | 19.8 | M 6 | 2.5 | M 5 |
| TW-01-25 | 0.29 | 36 | 70 | 90 | 23.5 | 57 | 68 | 45 | 11 | 5.0 | 24.8 | M 8 | 6.0 | M 6 |
| TW-01-30 | 0.50 | 42 | 90 | 103 | 31.0 | 72 | 79 | 52 | 12 | 6.5 | 27.0 | M 10 | 15.0 | M 8 |

Order examples: TW-01-20 for a guide carriage

TW-01-20, LLy for a guide carriage with floating bearing in y-direction, 1mm additional clearance

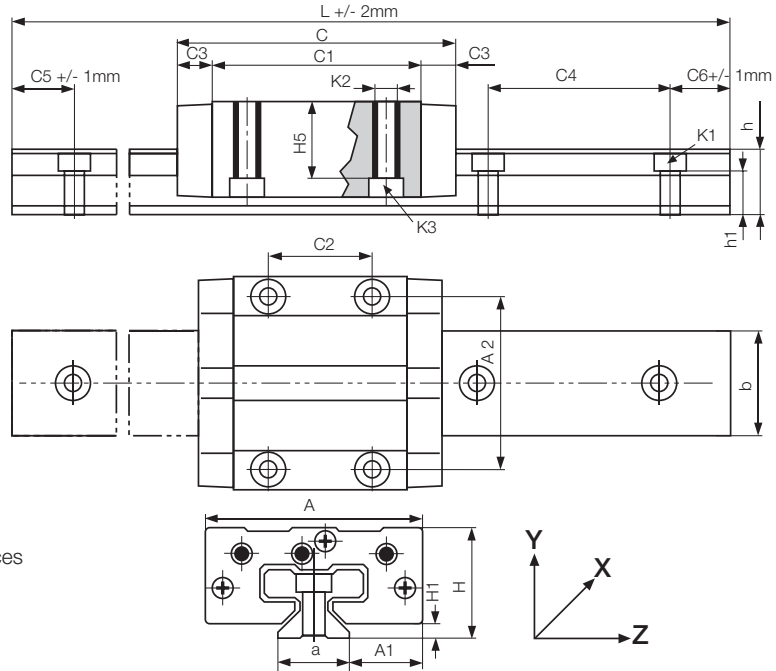
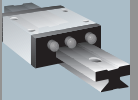
TW-01-20, LLz for a guide carriage with floating bearing in z-direction, 1mm additional clearance



Designation of load directions

| Type | C _{0y} | | C _{0(-y)} | | C _{0z} | | M _{0x} | | M _{0y} | | M _{0z} | |
|-------|-----------------|------|--------------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|
| | lbs | (kN) | lbs | (kN) | lbs | (kN) | ft lbs | (Nm) | ft lbs | (Nm) | ft lbs | (Nm) |
| 01-15 | 900 | 4 | 900 | 4 | 450 | 2 | 24 | 32 | 18 | 25 | 18 | 25 |
| 01-20 | 1665 | 7.4 | 1665 | 7.4 | 833 | 3.7 | 62 | 85 | 32 | 45 | 32 | 45 |
| 01-25 | 2250 | 10 | 2250 | 10 | 1125 | 5 | 92 | 125 | 48 | 65 | 48 | 65 |
| 01-30 | 3140 | 14 | 3140 | 14 | 1570 | 7 | 148 | 200 | 74 | 100 | 74 | 100 |

DryLin® T Linear Guide Systems - Automatic



- Automatic clearance adjustment
- Maintenance-free, dry operation
- Corrosion resistant
- Hard anodized aluminum rails (6063-T6)
- Clear anodized aluminum carriage
- Standard bore pattern symmetrical for rail, C5 = C6
- No charge for rails cut to standard C5 + C6 tolerances
- Clearance adjusts when applied load is removed

DryLin® T guide rails

| Part No. | Weight (kg/m) | L max. (mm) | a -0.2 (mm) | C4 (mm) | C5 min. (mm) | C5 max. (mm) | C6 min. (mm) | C6 max. (mm) | h (mm) | h1 (mm) | K1 for Screw DIN 912 | b (mm) | ly (mm²) | lz (mm²) | Wby (mm²) | Wbz (mm²) |
|----------|------------------|-------------------|-------------------|------------|--------------------|--------------------|--------------------|--------------------|-----------|------------|----------------------------|-----------|-------------|-------------|--------------|--------------|
| | | | | | | | | | | | | | | | | |
| TS-01-15 | 0.6 | 3650 | 15 | 60 | 20 | 49.5 | 20 | 49.5 | 15.5 | 10.0 | M 4 | 22 | 6440 | 4290 | 585 | 488 |
| TS-01-20 | 1.0 | 3650 | 20 | 60 | 20 | 49.5 | 20 | 49.5 | 19.0 | 12.3 | M 5 | 31 | 22570 | 11520 | 1456 | 1067 |
| TS-01-25 | 1.3 | 3650 | 23 | 60 | 20 | 49.5 | 20 | 49.5 | 21.5 | 13.8 | M 6 | 34 | 34700 | 19300 | 2041 | 1608 |
| TS-01-30 | 1.9 | 3650 | 28 | 80 | 20 | 59.5 | 20 | 59.5 | 26.0 | 15.8 | M 8 | 40 | 70040 | 40780 | 3502 | 2832 |

Order example: TS-01-15, 2000 for a guide rail TS-01-15 of 2 m length

For rails without mounting holes, please use part number suffix "S"

*4000 mm length available upon request

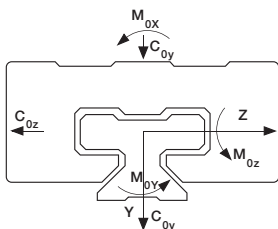
DryLin® T carriages with automatic clearance adjustment

| Part No. | Weight (kg) | H ±0.35 (mm) | A (mm) | C (mm) | A1 ±0.35 (mm) | | A2 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | H1 ±0.35 (mm) | H5 (mm) | K2- Thread | Max. Screw Torque (Nm) | K3 for Screw DIN 912 |
|-----------|----------------|--------------------|-----------|-----------|---------------------|----|------------|------------|------------|------------|---------------------|------------|---------------|---------------------------------|----------------------------|
| | | | | | | | | | | | | | | | |
| TWA-01-15 | 0.11 | 24 | 47 | 68 | 16.0 | 38 | 50 | 30 | 9 | 4.0 | 16.0 | M 5 | 1.11 | M 4 | |
| TWA-01-20 | 0.19 | 30 | 63 | 81 | 21.5 | 53 | 61 | 40 | 10 | 5.0 | 19.8 | M 6 | 1.84 | M 5 | |
| TWA-01-25 | 0.29 | 36 | 70 | 90 | 23.5 | 57 | 68 | 45 | 11 | 5.0 | 24.8 | M 8 | 4.43 | M 6 | |
| TWA-01-30 | 0.50 | 42 | 90 | 103 | 31.0 | 72 | 79 | 52 | 12 | 6.5 | 27.0 | M 10 | 11.06 | M 8 | |

Order examples: TWA-01-20 for a guide carriage

TWA-01-20, Lly for a guide carriage with floating bearing in y-direction, 1mm additional clearance

TWA-01-20, LLz for a guide carriage with floating bearing in z-direction, 1mm additional clearance



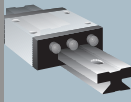
Designation of load directions

| Type | C _{0y} | | C _{0(-y)} | | C _{0z} | | M _{0x} | | M _{0y} | | M _{0z} | |
|-------|-----------------|------|--------------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|
| | lbs | (kN) | lbs | (kN) | lbs | (kN) | ft lbs | (Nm) | ft lbs | (Nm) | ft lbs | (Nm) |
| 01-15 | 900 | 4 | 900 | 4 | 450 | 2 | 24 | 32 | 18 | 25 | 18 | 25 |
| 01-20 | 1665 | 7.4 | 1665 | 7.4 | 833 | 3.7 | 62 | 85 | 32 | 45 | 32 | 45 |
| 01-25 | 2250 | 10 | 2250 | 10 | 1125 | 5 | 92 | 125 | 48 | 65 | 48 | 65 |
| 01-30 | 3140 | 14 | 3140 | 14 | 1570 | 7 | 148 | 200 | 74 | 100 | 74 | 100 |

DryLin® T Linear Guide Systems

PDF: www.igus.com/drylin-pdfs
 CAD: www.igus.com/drylin-CAD
 RoHS info: www.igus.com/RoHS





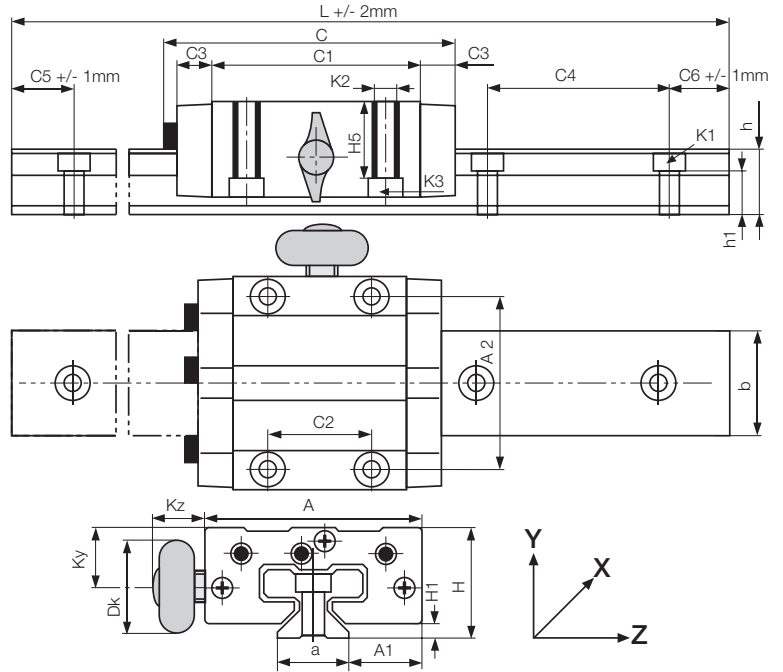
DryLin® T Linear Guide Systems - Manual Clamping

DryLin® T Linear Guide Systems

Telephone 1-800-521-2747
Fax 1-401-438-7270



- With manual clamp for simple locking functions. Plastic may creep over time resulting in decreased clamping forces (up to 70%).
- Adjustable clearance
- Maintenance-free, dry operation
- Corrosion resistant
- Standard bore pattern symmetrical for rail, C5 = C6
- No charge for rails cut to standard C5/C6 tolerances
- Not suitable for vertical applications



DryLin® T guide rails

| Part No. | Weight (kg/m) | L max. (mm) | a -0.2 (mm) | C4 (mm) | C5 min. (mm) | C5 max. (mm) | C6 min. (mm) | C6 max. (mm) | h | h1 | K1 for Screw DIN 912 | b (mm) | ly (mm ²) | lz (mm ²) | Wby (mm ²) | Wbz (mm ²) |
|----------|------------------|-------------------|-------------------|------------|--------------------|--------------------|--------------------|--------------------|------|------|----------------------------|-----------|--------------------------|--------------------------|---------------------------|---------------------------|
| TS-01-15 | 0.6 | 3650 | 15 | 60 | 20 | 49.5 | 20 | 49.5 | 15.5 | 10.0 | M 4 | 22 | 6440 | 4290 | 585 | 488 |
| TS-01-20 | 1.0 | 3650 | 20 | 60 | 20 | 49.5 | 20 | 49.5 | 19.0 | 12.3 | M 5 | 31 | 22570 | 11520 | 1456 | 1067 |
| TS-01-25 | 1.3 | 3650 | 23 | 60 | 20 | 49.5 | 20 | 49.5 | 21.5 | 13.8 | M 6 | 34 | 34700 | 19300 | 2041 | 1608 |
| TS-01-30 | 1.9 | 3650 | 28 | 80 | 20 | 59.5 | 20 | 59.5 | 26.0 | 15.8 | M 8 | 40 | 70040 | 40780 | 3502 | 2832 |

Order example: TS-01-15, 2000 for a guide rail TS-01-15 of 2m length

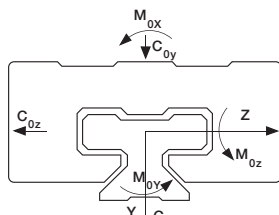
DryLin® T carriages

| Part No. | Weight (kg) | H ±0.35 (mm) | A (mm) | C (mm) | A1 ±0.35 (mm) | A2 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | H1 ±0.35 (mm) | H5 (mm) | K2 Thread | Max. Screw Torque (Nm) | K3 for Screw DIN 912 |
|--------------|----------------|--------------------|-----------|-----------|---------------------|------------|------------|------------|------------|---------------------|------------|--------------|---------------------------|-------------------------|
| TW-HKA-01-15 | 0.11 | 24 | 47 | 74 | 16.0 | 38 | 50 | 30 | 9 | 4.0 | 16.0 | M 5 | 1.5 | M 4 |
| TW-HKA-01-20 | 0.19 | 30 | 63 | 87 | 21.5 | 53 | 61 | 40 | 10 | 5.0 | 19.8 | M 6 | 2.5 | M 5 |
| TW-HKA-01-25 | 0.29 | 36 | 70 | 96 | 23.5 | 57 | 68 | 45 | 11 | 5.0 | 24.8 | M 8 | 6.0 | M 6 |
| TW-HKA-01-30 | 0.50 | 42 | 90 | 109 | 31.0 | 72 | 79 | 52 | 12 | 6.5 | 27.0 | M 10 | 15.0 | M 8 |

DryLin® T - Carriages with manual clamping

| Part No. | Size | Kz | Ky | Dk | Thread of the Clamp |
|--------------|------|------|------|------|---------------------|
| TW-HKA-01-15 | 15 | 19.0 | 11.5 | 20.0 | M6 |
| TW-HKA-01-20 | 20 | 18.0 | 15.0 | 28.0 | M8 |
| TW-HKA-01-25 | 25 | 17.0 | 19.0 | 28.0 | M8 |
| TW-HKA-01-30 | 30 | 20.0 | 21.5 | 28.0 | M8 |

TW-HKA-01-21VF, Lly for a guide carriage with manual clamping and floating bearing in y-direction. Floating offers 1mm extra clearance



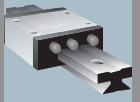
Designation of load directions

| Type | C _{0Y} | | C _{0(-)Y} | | C _{0Z} | | M _{0X} | | M _{0Y} | | M _{0Z} | |
|-------|-----------------|------|--------------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|
| | lbs | (kN) | lbs | (kN) | lbs | (kN) | ft lbs | (Nm) | ft lbs | (Nm) | ft lbs | (Nm) |
| 01-15 | 900 | 4 | 900 | 4 | 450 | 2 | 24 | 32 | 18 | 25 | 18 | 25 |
| 01-20 | 1665 | 7.4 | 1665 | 7.4 | 833 | 3.7 | 62 | 85 | 32 | 45 | 32 | 45 |
| 01-25 | 2250 | 10 | 2250 | 10 | 1125 | 5 | 92 | 125 | 48 | 65 | 48 | 65 |
| 01-30 | 3140 | 14 | 3140 | 14 | 1570 | 7 | 148 | 200 | 74 | 100 | 74 | 100 |

Internet: <http://www.igus.com>
email: sales@igus.com
QuickSpec: <http://www.igus.com/drylin-quickspec>

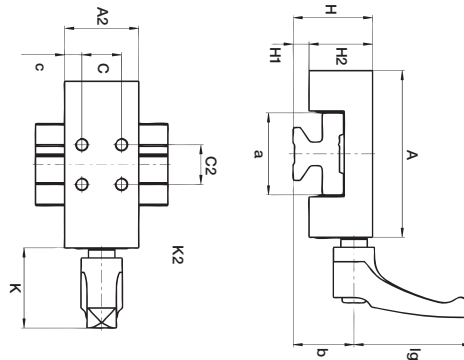
DryLin® T Linear Guide Systems

Clamping Elements and Manual Clamp



Special properties

- Compact clamping of high loads, for all sizes (15-30) holding strength 112 lbs
- Simple assembly



DryLin® T carriages with manual clamping

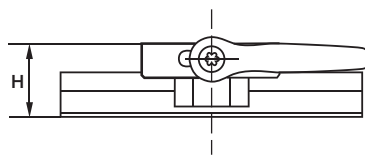
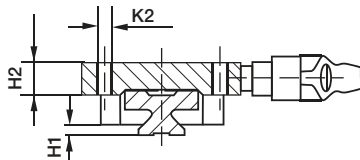
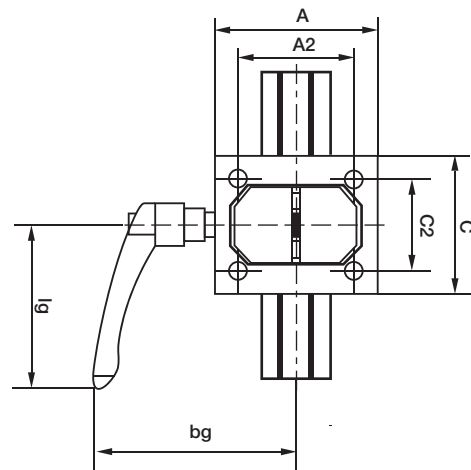
| Part No. | A | a | A2 | H | H1 | H2 | K2 | C | C2 | c | lg | b |
|------------|----|----|----|----|-----|------|----|----|----|-----|------|------|
| TWBM-11-15 | 47 | 22 | 15 | 24 | 4 | 20 | M4 | 15 | 15 | 4 | 44 | 18.9 |
| TWBM-11-20 | 63 | 31 | 28 | 30 | 6 | 24 | M5 | 15 | 15 | 6.5 | 44 | 23 |
| TWBM-11-25 | 70 | 34 | 35 | 36 | 5 | 31 | M6 | 20 | 20 | 7.5 | 63.6 | 26.2 |
| TWBM-11-30 | 90 | 40 | 38 | 42 | 6.5 | 35.5 | M6 | 20 | 20 | 9 | 78 | 32.4 |

DryLin® T manual clamp



Special properties

- Clamping of high loads, holding strength 112 lbf per clamp
- Brass clamp elements
- Same hole pattern as TW-01-25
- Removable handle



DryLin® T manual clamping

| Part No. | A | A2 | H | H1 | H2 | K2 | C | C2 | lg | bg |
|-------------|------|------|------|------|------|----|------|------|------|------|
| | [mm] | [mm] | [mm] | [mm] | [mm] | | [mm] | [mm] | [mm] | [mm] |
| TWBM-01-25* | 80 | 57 | 36 | 5 | 16 | M8 | 68 | 45 | 80 | 99 |

*Only for guide rails TS-01-25

DryLin® T guide rail for TWBM

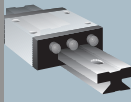
| Part No. | Weight | L | a | C4 | C5 | | C6 | | h | h1 | K1 for Screw DIN 912 | b | ly | lz | Wby | Wbz |
|----------|--------|-------|------|------|------|------|------|------|------|------|----------------------|------|--------------------|--------------------|--------------------|--------------------|
| | | | | | min. | max. | min. | max. | | | | | | | | |
| | [kg/m] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | | | | [mm] | [mm ²] | [mm ²] | [mm ²] | [mm ²] |
| TS-01-15 | 0.6 | 4,000 | 15 | 60 | 20 | 49 | 20 | 49 | 15.5 | 10.0 | M4 | 22 | 6,440 | 4,290 | 585 | 488 |
| TS-01-20 | 1.0 | 4,000 | 20 | 60 | 20 | 49 | 20 | 49 | 19.0 | 12.3 | M5 | 31 | 22,570 | 11,520 | 1,456 | 1,067 |
| TS-01-25 | 1.3 | 4,000 | 23 | 60 | 20 | 49 | 20 | 49 | 21.5 | 13.8 | M6 | 34 | 34,700 | 19,300 | 2,041 | 1,608 |
| TS-01-30 | 1.9 | 4,000 | 28 | 80 | 20 | 49 | 20 | 49 | 26.0 | 15.8 | M8 | 40 | 70,040 | 40,780 | 3,502 | 2,832 |

For rails without mounting holes, please use part number suffix "S"

DryLin® T Linear Guide Systems

PDF: www.igus.com/drylin-pdfs
 CAD: www.igus.com/drylin-CAD
 RoHS info: www.igus.com/RoHS





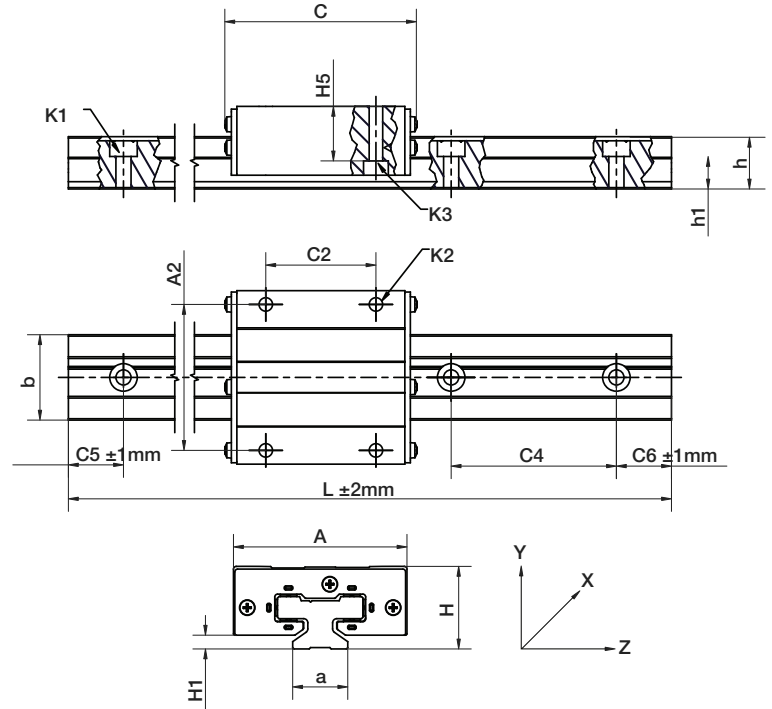
DryLin® T Linear Guide Systems Heavy Duty

DryLin® T Linear
Guide Systems

Telephone 1-800-521-2747
1-401-438-7270
Fax



- Linear guide carriage for extreme conditions (dirt, glue resins, wood chips, mud, etc.)
- iglide® J polymer sliding pads are mechanically fixed by metal end plates
- Dimensions equivalent to the TW-01 design and standard recirculating ball bearings.
- Non-adjustable version
- Same loading as -01 Series but with better shock resistance
- No charge for rails cut to standard C5/C6 tolerances



DryLin® T guide rails

| Part No. | Weight [kg/m] | L max. [mm] | a -0.2 [mm] | C4 [mm] | C5 | | C6 | | h | h1 | K1 for Screw DIN 912 | b [mm] | ly [mm ²] | lz [mm ²] | Wby [mm ²] | Wbz [mm ²] |
|----------|------------------|-------------------|-------------------|------------|------|------|------|------|------|------|----------------------------|-----------|--------------------------|--------------------------|---------------------------|---------------------------|
| | | | | | min. | max. | min. | max. | | | | | | | | |
| TS-01-20 | 1.0 | 3650 | 20 | 60 | 20 | 49 | 20 | 49 | 19.0 | 12.3 | M 5 | 31 | 22,570 | 11,520 | 1,456 | 1,067 |
| TS-01-25 | 1.3 | 3650 | 23 | 60 | 20 | 49 | 20 | 49 | 21.5 | 13.8 | M 6 | 34 | 34,700 | 19,300 | 2,041 | 1,608 |
| TS-01-30 | 1.9 | 3650 | 28 | 80 | 20 | 59 | 20 | 59 | 26.0 | 15.8 | M 8 | 40 | 70,040 | 40,780 | 3,502 | 2,832 |

Order example: TS-01-20, 2000 for a guide rail TS-01-20 of 2 m length. For rails without mounting holes, please use part number suffix "S"

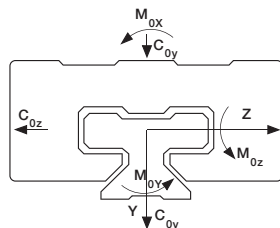
DryLin® T heavy duty carriages

| Part No. | Weight (kg) | H ± 0.35 (mm) | H5 (mm) | A (mm) | C (mm) | A2 (mm) | C2 (mm) | H1 ± 0.35 (mm) | K2 (mm) | K3 (mm) |
|----------|----------------|---------------------|------------|-----------|-----------|------------|------------|----------------------|------------|------------|
| | | | | | | | | | | |
| TW-02-25 | 0.29 | 36 | 24.8 | 70 | 77 | 57 | 45 | 5.0 | M8 | M6 |
| TW-02-30 | 0.50 | 42 | 27.0 | 90 | 92 | 72 | 52 | 6.5 | M10 | M8 |

Order examples: TW-02-20 for a guide carriage

TW-02-20, Lly for a guide carriage with floating bearing in y-direction, 1mm additional clearance

TW-02-20, LLz for a guide carriage with floating bearing in z-direction, 1mm additional clearance

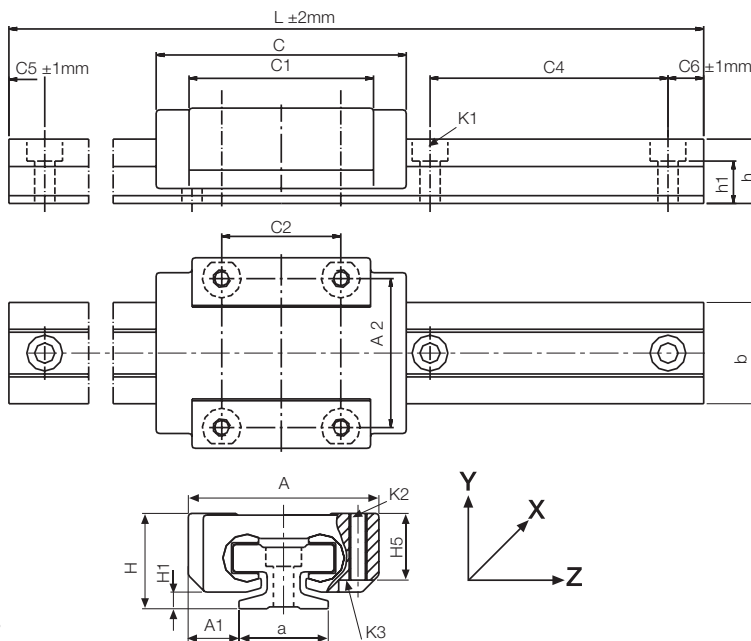
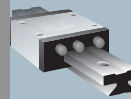


Designation of load directions

| Type | C _{0y} | | C _{0(-y)} | | C _{0z} | | M _{0x} | | M _{0y} | | M _{0z} | |
|-------|-----------------|------|--------------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|
| | lbs | (kN) | lbs | (kN) | lbs | (kN) | ft lbs | (Nm) | ft lbs | (Nm) | ft lbs | (Nm) |
| 02-20 | 1665 | 7.4 | 1665 | 7.4 | 833 | 3.7 | 62 | 85 | 32 | 45 | 32 | 45 |
| 02-25 | 2250 | 10 | 2250 | 10 | 1125 | 5 | 92 | 125 | 48 | 65 | 48 | 65 |
| 02-30 | 3140 | 14 | 3140 | 14 | 1570 | 7 | 148 | 200 | 74 | 100 | 74 | 100 |

Internet: <http://www.igus.com>
email: sales@igus.com
QuickSpec: <http://www.igus.com/drylin-quickspec>

DryLin® T Linear Guide Systems - Miniature



- Maintenance-free, dry operation
- 3 sizes
- Cast zinc chromated carriage
- iglide® J polymer sliding pads
- Hard anodized aluminum rails
- Small mounting height and width
- Resistant to corrosion
- Standard bore pattern symmetrical C5 = C6
- No charge for rails cut to standard C5/C6 tolerances

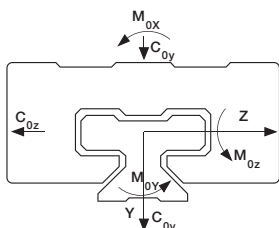
DryLin® T miniature rails

| Part No. | Weight [kg/m] | L max. [mm] | a -0.2 [mm] | C4 [mm] | C5 | | C6 | | h | h1 | K1 for Screw DIN 912 | b [mm] | ly [mm²] | lz [mm²] | Wby [mm²] | Wbz [mm²] |
|----------|------------------|-------------------|-------------------|------------|------|------|------|------|------|-----|----------------------------|-----------|-------------|-------------|--------------|--------------|
| | | | | | min. | max. | min. | max. | | | | | | | | |
| 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 | 0.19 | 2000 | 12 | 25 | 5 | 19.5 | 5 | 19.5 | 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 |

DryLin® T miniature carriages

| Part No. | Weight (g) | H ±0.2 (mm) | A ±0.2 (mm) | C ±0.3 (mm) | A1 ±0.35 (mm) | A2 (mm) | C1 (mm) | C2 (mm) | H1 ±0.35 (mm) | H5 (mm) | K2 Thread | Max. Screw Torque (Nm) | K3 for Screw DIN 912 |
|----------|---------------|-------------------|-------------------|-------------------|---------------------|------------|------------|------------|---------------------|------------|--------------|---------------------------------|----------------------------|
| | | | | | | | | | | | | | |
| TW-04-09 | 17 | 10 | 20 | 29 | 5.5 | 15 | 18 | 13 | 1.7 | 7.2 | M 2 | 25 | (M 2) |
| TW-04-12 | 34 | 13 | 27 | 34 | 7.5 | 20 | 22 | 15 | 2.2 | 9.5 | M 3 | 50 | M2 (M 3) |
| TW-04-15 | 61 | 16 | 32 | 42 | 8.5 | 25 | 31 | 20 | 2.8 | 11 | M 3 | 50 | M2 (M 3) |

Available from stock



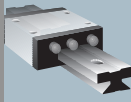
Designation of load directions

| Type | C _{0y} | | C _{0(-y)} | | C _{0z} | | M _{0x} | | M _{0y} | | M _{0z} | |
|-------|-----------------|------|--------------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|
| | lbs | (kN) | lbs | (kN) | lbs | (kN) | ft lbs | (Nm) | ft lbs | (Nm) | ft lbs | (Nm) |
| 04-09 | 108 | .48 | 108 | .48 | 54 | .24 | 2.5 | 3.4 | 1.3 | 1.8 | 1.3 | 1.8 |
| 04-12 | 215 | .96 | 215 | .96 | 108 | .48 | 6.8 | 9.2 | 3.2 | 4.4 | 3.2 | 4.4 |
| 04-15 | 315 | 1.4 | 315 | 1.4 | 157 | 0.7 | 12.5 | 17 | 6.0 | 8 | 6.0 | 8 |

DryLin® T Linear Guide Systems

PDF: www.igus.com/drylin-pdfs
 CAD: www.igus.com/drylin-CAD
 RoHS info: www.igus.com/RoHS





DryLin® T Linear Guide Systems - Adjusting and Installation

DryLin® T Linear Guide Systems

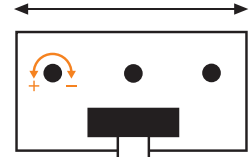
Telephone 1-800-521-2747
Fax 1-401-438-7270

Internet: <http://www.igus.com>
email: sales@igus.com
QuickSpec: <http://www.igus.com/drylin-quickspec>

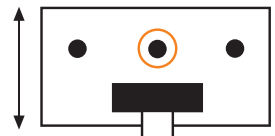
Adjusting the clearance: DryLin® T

DryLin® T is delivered ready for installation. Clearance of the carriage is adjusted at the factory. The preadjustment is determined by the acting forces on each individual system. If necessary, clearance of the DryLin® T linear guide system can be readjusted. This should always take place when there is no load on the carriage.

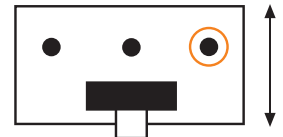
- 1 After removing the protective cover, loosen the locknuts Width across flats:
 - SW 5 for TW-01-15 and TW-01-20
 - SW 7 for TW-01-25 and TW-01-30
- 2 Adjust the bearing clearance for the 3 guide points with an Allen key – Allen key size:
 - 1.5 mm for TW-01-15 and TW-01-20
 - 2.0 mm for TW-01-25 and TW-01-30
- 3 Check the clearance of the carriage after adjusting the 3 levels. If it is sufficient, tighten the locknuts and put on the cover.
- 4 There is a danger that excessive reduction of the clearances can seize the sliding pads and that the clearance cannot be reset simply by loosening the adjustment screws. The sliding pads are then released by pressing the reset button on the opposite side. Press hard against the readjusting spring. You must have already loosened the respective adjustment screws. Use the correct size pin for this purpose:
 - 2.5 mm for TW-01-20 and TW-01-15
 - 3.0 mm for TW-01-25 and TW-01-30



lateral guide:
- less clearance
+ more clearance



vertical guide left



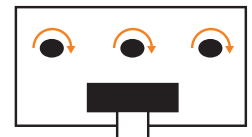
vertical guide right

Video instructions available at www.igus.com

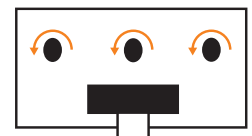
Adjusting the clearance: DryLin® T Automatic

The DryLin® T Automatic series offers you an automatic adjustment of the clearance. A readjustment can take place automatically in steps of 0.1 mm. Springs tighten the regulating wedge immediately as soon as the clearance is bigger than 0.1 mm and the system is unloaded.

- 1 The system will be delivered with 3 keys and are necessary for mounting the carriage onto the rail. In case these keys are removed they need to be refitted into the openings and turned clockwise 90°.
- 2 After the carriage is on the rail, remove the keys by turning them counterclockwise 90° and pull out. The clearance will then be adjusted automatically.
- 3 You can remove the carriage at any time. In order to do so, simply plug the keys back into the carriage (see step 1).

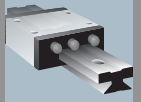


locked



unlocked

DryLin® T Linear Guide Systems System Design



Example of DryLin® T Calculation

For the exact calculation of the Linear Guide System it is essential to find out whether the position of the forces is within the allowable limits, and if the gliding element where the highest forces occur is not overloaded. The calculation of the necessary driving force and the maximum speed allowed is important. Each mounting version requires a different formula for calculation. Factors concerning shocks and acceleration forces are not included in the calculation, therefore the maximum load and allowable load must be monitored.

Variables in the Calculation:

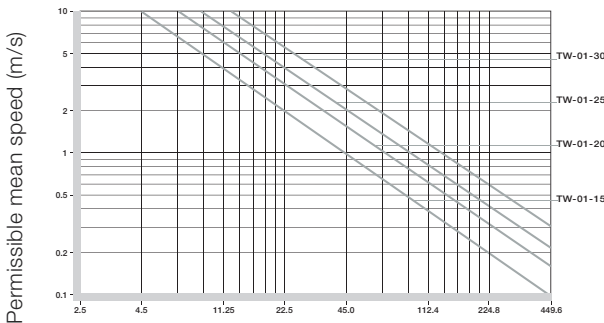
| | |
|-------------------|---|
| Fa | : Drive Force (lbs) |
| Fs | : Applied Mass Force (lbs) |
| Fy, Fz | : Bearing Load (lbs) in y or z direction (mm) |
| sx, sy, sz | : Distance of the mass force in y or z direction (mm) |
| ay, az | : Distance of the drive force in y or z direction (mm) |
| wx | : Distance between carriages on a rail (mm) |
| LX | : Constant from table (mm) |
| Zm | : Constant from table (mm) |
| Y0 | : Constant from table (mm) |
| b | : Distance between guide rails (mm) |
| μ | : Coefficient of Friction, μ = 0 for static Loads μ = 0.2 for dynamic loads |
| ZW | : number of carriages per rail |

Coefficients:

| | 1 Rail 1 Carriage | 1 Rail 2 Carriages | 2 Rails 3-4 Carriages |
|----------------------|----------------------|-----------------------|--------------------------|
| K₁ | (ay+Y0)/Lx | (ay+Y0)/Wx | (ay+Y0)/Wx |
| K₂ | (sy+Y0)/Lx | (sy+Y0)/Wx | (sy+Y0)/Wx |
| K₃ | az/Lx | az/Wx | az/Wx |
| K₄ | sx/Lx | sx/Wx | sx/Wx |
| K₅ | sz/Lx | sz/Wx | sz/Wx |
| K₆ | (sy+Y0)/Zm | (sy+Y0)/Zm | (sy+Y0)/b |
| K₇ | sz/Zm | sz/Zm | (sz/b)-0.5 |

The Constant Values:

| Part # | LX (mm) | ZM (mm) | Y0 (mm) |
|----------|------------|------------|------------|
| TW-01-15 | 29 | 16 | 11.5 |
| TW-01-20 | 35 | 23 | 15.0 |
| TW-01-25 | 41 | 25 | 19.0 |
| TW-01-30 | 49 | 29 | 21.5 |



| Part No. | Fy max. lbs | Fz max. (N) |
|----------|----------------|----------------|
| TW-01-15 | 450 | 2000 |
| TW-01-20 | 830 | 3700 |
| TW-01-25 | 1125 | 5000 |
| TW-01-30 | 1575 | 7000 |

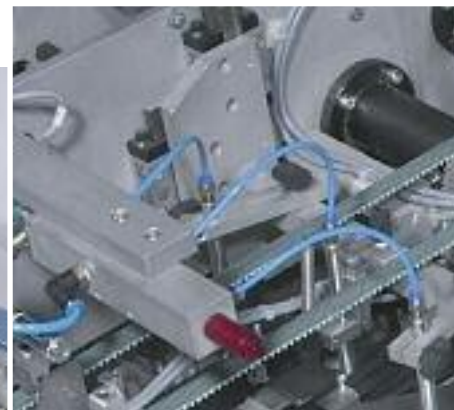


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Maximum permissible load

Centric bearing load (N)

Diagram for determining the maximum permissible speed for the calculated bearing load

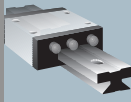


DryLin® T linear guide systems are used in these enveloping machines to guide a suction opener for envelopes. The guide system must have low clearance, be maintenance-free and not require any lubrication.

DryLin® T Linear
Guide Systems

PDF: www.igus.com/drylin-pdfs
CAD: www.igus.com/drylin-CAD
RoHS info: www.igus.com/RoHS





Recommended Procedure:

1st Step

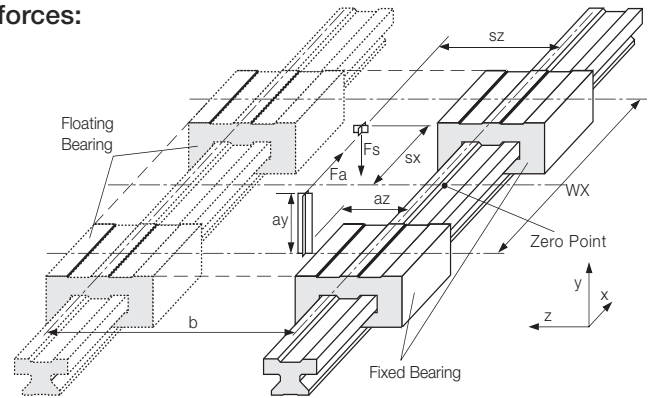
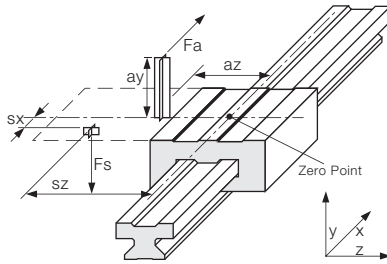
Select the mounting version:

- horizontal
 - 1 rail and 1 carriage
 - 1 rail and 2 carriages
 - 2 rails and 4 carriages

2nd Step

Check to see whether the maximum distances of the applied forces are within the permissible values (see Maximum permissible distances.)

Maximum permissible distances between acting forces:



Variation: 1 Rail, 1 Carriage

| | | |
|-------------|---|---------------|
| $s_y + s_z$ | < | $2 L_x - Y_0$ |
| $a_y + a_z$ | < | $2 L_x - Y_0$ |
| s_y | < | $5 Z_m$ |
| s_z | < | $5 Z_m$ |

Variation: 1 Rail, 2 Carriages Variation: 2 Rails, 4 Carriages

| | | |
|-------------|---|---------------|
| $s_y + s_z$ | < | $2 w_x - Y_0$ |
| $a_y + a_z$ | < | $2 w_x - Y_0$ |

3rd Step:

Calculate the necessary drive force

3.1 Center of gravity in x and z direction inside the carriage(s)

$$F_{a1} = \frac{\mu}{1 - 2\mu K_3} \cdot F_s$$

3.2 Center of gravity in z direction outside of the carriage(s)

$$F_{a2} = \frac{2\mu K_7}{1 - 2\mu K_3} \cdot F_s$$

3.3 Center of gravity in x direction outside of the carriage(s)

$$F_{a3} = \frac{2\mu K_4}{1 - 2\mu K_3 - 2\mu K_1} \cdot F_s$$

If the position of the center of gravity is not specified: $F_a = \text{MAX} (F_{a1}, F_{a2}, F_{a3})$

4th Step:

Calculate the maximum bearing load

4.1 Maximum bearing load in the y direction

$$F_{y \max} = \frac{2F_s}{Z_w} \left(\frac{2K_4}{Z_w} + 0,5 \right) \cdot \left(K_7 + 0,5 \right) + \frac{2F_a K_1}{Z_w^2}$$

4.2 Maximum bearing load in the z direction

$$F_{z \max} = \frac{4F_a K_3}{Z_w^2}$$

5th Step:

Check calculated load for both y and z with table on page 26.15 - Maximum permissible load for $F_{y \max}$ & $F_{z \max}$. This table illustrates the maximum permissible load on a single gliding element from the DryLin® T carriage. Evaluating the maximum load on a single gliding element establishes a safety factor for the linear system.

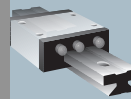
►Page 26.15

6th Step:

Determine the maximum permissible speed for the calculated load from Step No. 4

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DryLin® T Linear Guide Systems - Mounting Version - Lateral



Recommended Procedure:

1st Step

Select the mounting version:

- **side-mounting**
 - 1 rail and 1 carriage
 - 1 rail and 2 carriages
 - 2 rails and 4 carriages

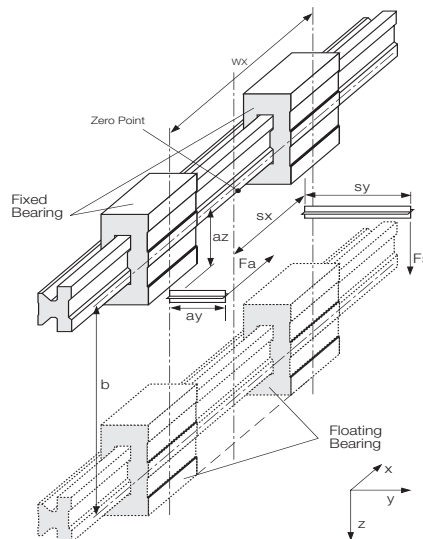
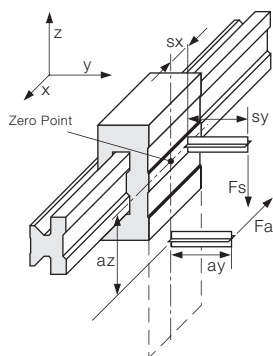


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2nd Step

Check to see whether the maximum distances of the applied forces are within the permissible values (see Maximum permissible distances.)

Maximum permissible distances between acting forces:



Variation: 1 Rail, 1 Carriage

| | | |
|-----------|-----|-------------|
| $sy + sz$ | $<$ | $2 Lx - Y0$ |
| $ay + az$ | $<$ | $2 Lx - Y0$ |
| sy | $<$ | $5 Zm$ |
| sz | $<$ | $5 Zm$ |

Variation: 1 Rail, 2 Carriages Variation: 2 Rails, 4 Carriages

| | | |
|-----------|-----|-------------|
| $sy + sz$ | $<$ | $2 wx - Y0$ |
| $ay + az$ | $<$ | $2 wx - Y0$ |

3rd Step:

Calculate the necessary drive force

First, two calculations must be made:

$$Fa1 = \frac{(1+2K_6)\mu}{1-2\mu K_1} \cdot Fs \qquad Fa2 = \frac{(2K_4+2K_6)\mu}{1-2\mu K_1-2\mu K_3} \cdot Fs$$

The drive force Fa corresponds to the calculated maximum value $Fa = \text{MAX}(Fa1, Fa2)$

4th Step:

Calculate the maximum bearing load

4.1 Maximum bearing load in the y direction

$$Fy_{\max} = \frac{Fs K_6}{Zw} + \frac{2Fa K_1}{Zw^2}$$

4.2 Maximum bearing load in the z direction

$$Fz_{\max} = \frac{2Fs}{Zw} \left(\frac{2K_4}{Zw} + 0.5 \right) + \frac{4Fa K_3}{Zw^2}$$

5th Step:

Check calculated load for both y and z with table on page 26.15 - Maximum permissible load for Fy_{\max} & Fz_{\max} . This table illustrates the maximum permissible load on a single gliding element from the DryLin® T carriage. Evaluating the maximum load on a single gliding element establishes a safety factor for the linear system.

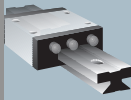
►Page 26.15

6th Step:

Determine the maximum permissible speed for the calculated load from Step No. 4

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Recommended Procedure:

1st Step

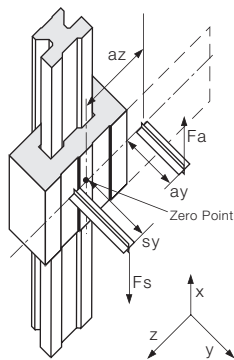
Select the mounting version:

- vertical
 - 1 rail and 1 carriage
 - 1 rail and 2 carriages
 - 2 rails and 4 carriages

2nd Step

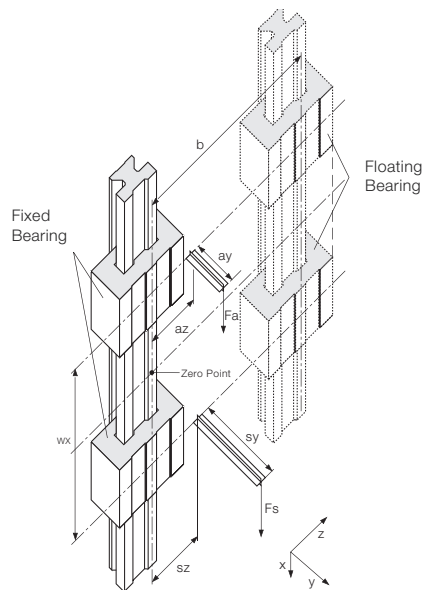
Check to see whether the maximum distances of the applied forces are within the permissible values (see Maximum permissible distances.)

Maximum permissible distances between acting forces:



Variation: 1 Rail, 1 Carriage

| | | |
|-------------|---|---------------|
| $s_y + s_z$ | < | $2 L_x - Y_0$ |
| $a_y + a_z$ | < | $2 L_x - Y_0$ |
| s_y | < | $5 Z_m$ |
| s_z | < | $5 Z_m$ |



Variation: 1 Rail, 2 Carriages
Variation: 2 Rails, 4 Carriages

| | | |
|-------------|---|---------------|
| $s_y + s_z$ | < | $2 w_x - Y_0$ |
| $a_y + a_z$ | < | $2 w_x - Y_0$ |

3rd Step:

Calculate the necessary drive force

First, four calculations must be made:

$$F_{a1} = \frac{2\mu (s_z + s_y + Y_0) - w_x}{2\mu (a_z + a_y + Y_0) - w_x} \cdot F_s$$

$$F_{a3} = \frac{2\mu (s_z - s_y - Y_0) - w_x}{2\mu (a_z - a_y - Y_0) - w_x} \cdot F_s$$

$$F_{a2} = \frac{2\mu (-s_z + s_y + Y_0) - w_x}{2\mu (-a_z + a_y + Y_0) - w_x} \cdot F_s$$

$$F_{a4} = \frac{2\mu (s_z + s_y + Y_0) + w_x}{2\mu (a_z + a_y + Y_0) + w_x} \cdot F_s$$

The drive force F_a corresponds to the calculated maximum value $F_a = \text{MAX} (F_{a1}, F_{a2}, F_{a3}, F_{a4})$

4th Step:

Calculate the maximum bearing load

4.1 Maximum bearing load in the y direction

$$F_{y \max} = \left| F_a \frac{a_y + Y_0}{w_x} - F_s K_2 \right| \cdot \frac{2}{Z W^2}$$

4.2 Maximum bearing load in the z direction

$$F_{z \max} = \left| F_a \frac{a_z}{w_x} - F_s K_5 \right| \cdot \frac{4}{Z W^2}$$

5th Step:

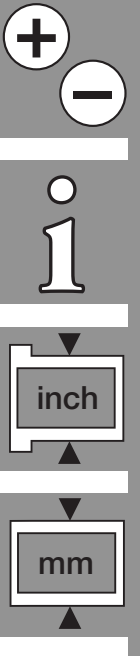
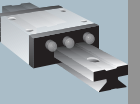
Check calculated load for both y and z with table on page 26.15 - Maximum permissible load for $F_{y \max}$ & $F_{z \max}$. This table illustrates the maximum permissible load on a single gliding element from the DryLin® T carriage. Evaluating the maximum load on a single gliding element establishes a safety factor for the linear system.

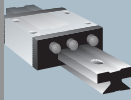
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6th Step:

Determine the maximum permissible speed for the calculated load from Step No. 4

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DryLin® T Linear Guide Systems

DryLin® T Linear
Guide Systems

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