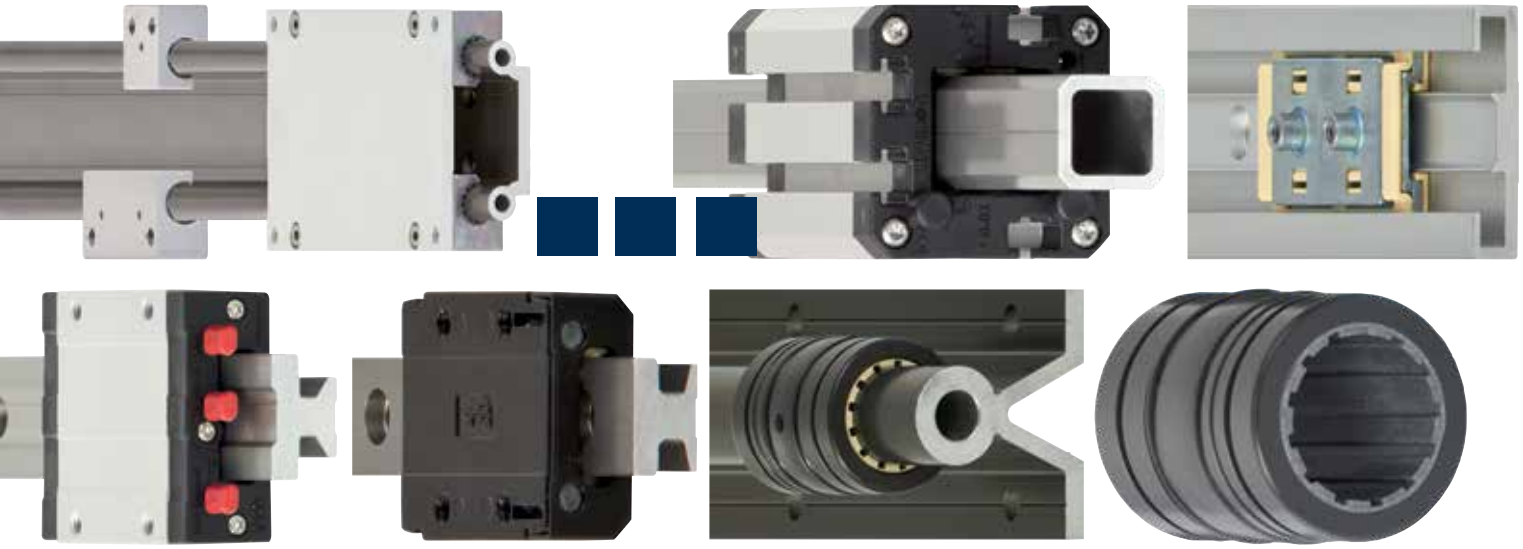
# drylin®...

Linear technology,



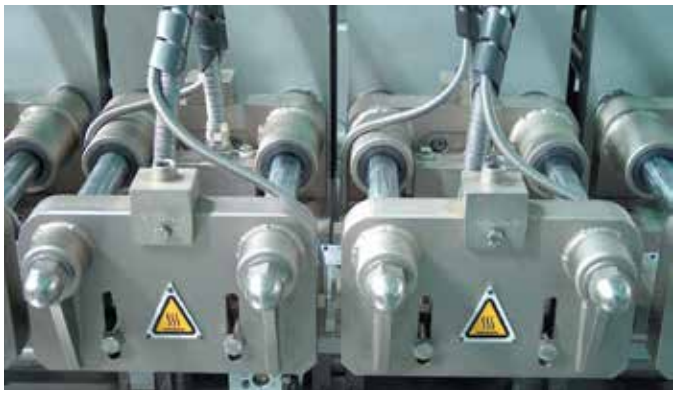
# ...plastics

## Improve technology ... Reduce cost.

igus® produces innovative products with the goal of reducing maintenance, increasing lifetime and offering low-cost solutions for your equipment.

**Label feeding system/Packaging technology**
**Quick and flexible format adjustment without external lubrication at lower costs using the drylin® T linear guide system.**

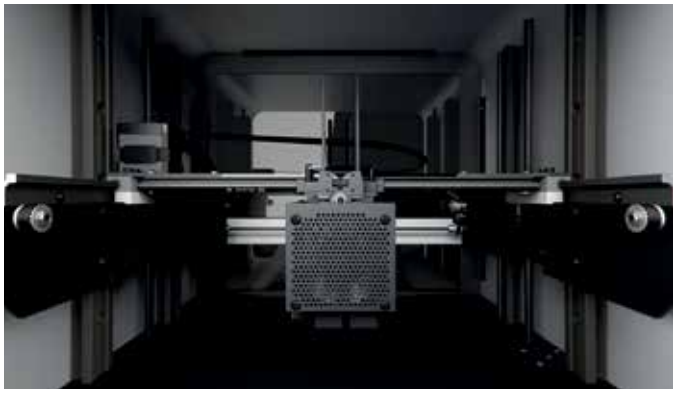
CHAMPAGNE-BOTTLE SEALING MACHINE
With no required external lubrication and high chemical resistance, drylin® guides perform well in food industry applications



FORMING, FILLING AND SEALING MACHINE
Self-lubricating drylin® high temperature bearings up to 248°F (120°C), are used in welding jam of this form, fill and seal machine

DOOR ADJUSTMENT
Smooth, low-noise operation, as well as significant cost advantages are obtained by using drylin® W hybrid rolling bearings to guide the guards of machine tools

SYSTEMS FOR THE PRODUCTION OF ALUMINUM CARTRIDGES
The lack of external lubricants and the resistance to paint mist led to the use of drylin® R linear plain bearings



3D-PRINTER
drylin® T and W, as well as SD lead screw units travel without external lubrication, eliminating the risk of contaminating the housing, filament, and printed object in this 3D printer


MOBILE AND STATIONARY SAW MILLS
The drylin® W modular linear guide system with iglide® J liners smoothly adjust the saw blade guide of this mobile saw mill

## drylin® W profile guides

**Single rails, square:**

WSQ-XX

▶ Page 1110

**Pillow blocks, square:**

Wj200QM

▶ Page 1111

**Single rails, round:**

WS-XX

▶ Page 1112

**Single rails, round made of 316 stainless steel:**
**WS-XX-ES-(FG)**

▶ Page 1113

## drylin® W profile guides

**With spring preload:**

WJ(200)UM-XX-P

▶ Page 1117

**Pillow blocks, single, round:**

WJ200UMA-XX-AL

▶ Page 1118

**Double rails square / round:**

WSQ- / WS-XX-XX

▶ Page 1120 / 1126

**High torsional rigidity: high profile rails**

WSX-06 / WSX-10

▶ Page 1121 / 1127

## drylin® W profile guides

**Round double rail, made of 316 stainless steel:**

WS-XX-XX-ES-(FG)

▶ Page 1128

**Assembled stainless steel guide carriage, round:**

WW-XX-XX-GESG-PES

▶ Page 1130

**Curved rail profiles:**

WSB

▶ Page 1132

**Single bearings for curved rails:**

WI3UBP-XX-LLZ

▶ Page 1134

## drylin® W hybrid roller bearings

**Single hybrid roller bearings:**

WJRM-01

▶ Page 1146

**Double hybrid roller bearings:**

WJRM-21

▶ Page 1147

**Hybrid single and double rollers, 316 stainless steel:**

WRJM-XX-ES-FG

▶ Page 1148

**Hybrid carriages for lateral installation:**

WWR-21-XX

▶ Page 1149

## drylin® linear technology - Accessories

**Manual clamp for simple positioning:**

WHKA-XX-(AL)/WHKAQ

▶ Page 1154

**Manual clamp for higher holding force:**

WHKD

▶ Page 1155

**Manual clamp for drylin® W hybrid roller bearings:**

WJRM-21-XX-HKA

▶ Page 1156

**Liners made from dry-tech® polymers**

▶ Page 1157

**Pillow blocks, round:**

WJ200UM

▶ **Page 1114**

**Pillow blocks, round made of 316 stainless steel**

WJUM-XX-ES-(FG)

▶ **Page 1114**

**Tandem pillow blocks:**

WJ200UMT-XX-AL

▶ **Page 1115**

**Manual clearance adjustment:**

WJ(200)UME

▶ **Page 1116**

**Linear guides – lightweight, non-metallic:**

WSPC

▶ **Page 1122**

**Linear guides – lightweight, non-metallic:**

WSPG

▶ **Page 1123**

**Complete carriages: square/round**

WWQ / WW

▶ **Page 1124 / 1129**

**Mono-slide carriages:**

WWC

▶ **Page 1125**

**Carriages for curved rails:**

WWB

▶ **Page 1135**

**Double rails with machine recesses:**

WS(Q)-XX-CAM

▶ **Page 1136**

**Complete carriages for camera sliders:**

WW-XX-SL

▶ **Page 1137**

**Hybrid slider carriages with four double roller bearings:**

WWH-XX-SL

▶ **Page 1138**

**Hybrid carriages with four double roller bearings:**

WWH-21

▶ **Page 1150**

**Hybrid carriages for horizontal installation:**

WWH-10

▶ **Page 1151**

**Plastic liners:**

J200UMA-XX

▶ **Page 1158**

**End caps for drylin® high profile rails WSX:**

WSX-XX-EC

▶ **Page 1159**

# drylin® linear technology | Product overview

## drylin® N low-profile lineaer guides

**For small spaces:**

Installation size 17

▶ Page 1168

**The largest variety of carriages (options):**

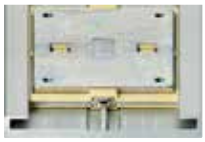
Installation size 27

▶ Page 1170

**Suitable for aluminium construction profiles:**

Installation size 40

▶ Page 1172



**High loads with reduced height:**

Installation size 80

▶ Page 1174

## drylin® T guide rails and carriages

**Guide rails:**

▶ Page 1192

**High performance series:**

▶ Page 1195

**Standard adjustable series**

▶ Page 1193

**Automatic clearance adjustment series:**

▶ Page 1194

## drylin® T rail guides

**Accessories:**

▶ Page 1199

**Miniature guides:**

▶ Page 1200

**Adjustable miniature guides:**

▶ Page 1201

**Accessories:**

End caps for guide rails and bores

▶ Page 1202

## drylin® R liners made from iglide® J | inch / metric

**Long, closed design for shafts:**
**JUI-01 / JUM-01**

▶ Page 1214 / ▶ Page 1252

**Long, open design for supported shafts:**
**JUIO-01 / JUMO-01**

▶ Page 1215 / ▶ Page 1253

**Long, closed design, low clearance:**
**JUI-11 / JUM-11**

▶ Page 1216 / ▶ Page 1254

**Works on all shafting**

**Long, open design, low clearance:**
**JUIO-11 / JUMO-11**

▶ Page 1217 / ▶ Page 1255

## ... made from iglide® E7 | inch / metric

**Long, closed design for shafts:**
**E7UI-01 / E7UM-01**

▶ Page 1220 / ▶ Page 1260

**Long, open design for supported shafts:**
**E7UIO-01 / E7UMO-01**

▶ Page 1221 / ▶ Page 1261

**Best match for steel and stainless shafting**

**Short, closed design for shafts:**
**E7UM-02**

▶ Page 1262

Telescopic rails:

▶ Page 1180

Telescopic rails with detent:

▶ Page 1181

Accessories: Manual clamp

▶ Page 1182

Accessories: End cap

▶ Page 1183

With manual clamp:

▶ Page 1196

Heavy-duty version:

▶ Page 1197

Compact design:

▶ Page 1198

Accessories:

▶ Page 1199

Accessories:
Replacement plastic sliders

▶ Page 1202

## ... made from iglide® J200 | inch / metric

Short, closed design for shafts:
JUM-02

▶ Page 1256

Short, closed design low clearance:
JUM-12

▶ Page 1257

Long, closed design for shafts:
J200UI-01 / J200UM-01

▶ Page 1218 / ▶ Page 1258

Best match for aluminum shafts

Long, open design for shafts:
J200UIO-01 / J200UMO-01

▶ Page 1219 / ▶ Page 1259

## ... made from iglide® X | inch / metric

Long, closed design, high temperature:
XUI-01 / XUM-01

▶ Page 1222 / ▶ Page 1263

Long, open design, high temperature:
XUIO-01 / XUMO-01

▶ Page 1223 / ▶ Page 1264

For temperatures -148°F to 482°F and high chemical resistance

Short, closed design, high temperature:
XUM-02

▶ Page 1265

# drylin® linear technology | Product overview

## ... made from iglide® A180 | metric

**Long, closed design for shafts:**
A180UM-01

▶ Page 1266

FDA compliant

**Long, open design for supported shafts:**
A180UMO-01

▶ Page 1267

## ... made from iglide® A160| metric

**Best match for stainless steel with FDA compliant**

**Long, closed design for shafts:**
A160UM-01

▶ Page 1268

## drylin® R all plastic bearings | inch / metric

**Standard design made from iglide®**
RJI-01 / RJM-01

▶ Page 1224 / ▶ Page 1271

**Standard design, precise, made from iglide® J**
RJIP-01 / RJMP-01

▶ Page 1225 / ▶ Page 1272

**Japanese dimensions made from iglide® J4**
RJ4JP-01

▶ Page 1273

**Low-cost made from iglide® J260**
RJ260UM-02

▶ Page 1274

## drylin® R adapters | inch / metric

**Closed, anodized aluminum adapter**
RE7UI-01 / RE7UM-01

▶ Page 1231 / ▶ Page 1282

**Closed adapters made of stainless steel 303**
RJUI-ES / RJUM-ES

▶ Page 1233 / ▶ Page 1285

**Split aluminum adapters**
TJUI-01 / TJUM-01

▶ Page 1235 / ▶ Page 1286

**Split aluminum adapters, floating bearings**
TJUI-03 / TJUM-03

▶ Page 1237 / ▶ Page 1287

## drylin® R pillow blocks | inch

**Closed pillow block**
RJUI-XX

▶ Page 1246

**Open pillow block**
OJUI-XX

▶ Page 1247

**Closed pillow block Twin design**
RJUI-XX-TW

▶ Page 1248

**Open pillow block Twin design**
OJUI-XX-TW

▶ Page 1249

## drylin® R shafts | inch

**Aluminum shaft**
AWI

▶ Page 1318

**Supported aluminum shaft**
AWUI

▶ Page 1319

**Steel shaft**
SWI

▶ Page 1320

**Supported steel shaft**
SWUI

▶ Page 1321

## drylin® R liners

**Clip-on liners**

JUCM

▶ Page 1270

## Sliding disc

**Sliding disc for large force displacement**

RSDJ

▶ Page 1275

## drylin® R adapters | inch / metric

**Closed aluminum adapters**

RJUI-01 / RJUM-01

▶ Page 1226 / ▶ Page 1276

**Closed aluminum adapters, precise**

RJUI-11 / RJUM-11

▶ Page 1227 / ▶ Page 1277

**Closed aluminum adapters floating bearings**

RJUI-03 / RJUM-03

▶ Page 1228 / ▶ Page 1278

**Closed, anodized aluminum adapters, short design**

RJUM-02

▶ Page 1279

**Open, anodized aluminum adapters, for supported shafts**

OJUI-01 / OJUM-01

▶ Page 1240 / ▶ Page 1288

**Open aluminum adapters, floating bearing**

OJUI-03 / OJUM-03

▶ Page 1242 / ▶ Page 1289

**Closed, anodized aluminum adapters, short design**

RE7UM-02

▶ Page 1283

**Flanged pillow block Square**

FJUI-XX

▶ Page 1250

**Flanged pillow block Round, twin design**

FJUIT

▶ Page 1250

**Flanged pillow block Square, twin design**

FJUI-XX-TW

▶ Page 1251

**Stainless steel shafts**

EWI - 440C

EEWI - 420C

▶ Page 1322

**Stainless steel supported shaft**

EWUI

▶ Page 1324

# drylin® linear technology | Product overview

## drylin® R pillow blocks | metric

**Closed aluminum adapters, short design**
RJUM-05
▶ Page 1290

**Closed, adjustable aluminum adapters, short design**
RJUME-05
▶ Page 1291

**Split aluminum adapters, short design**
TJUM-05
▶ Page 1292

**Closed aluminum adapters, tandem design**
RJUMT-05
▶ Page 1293

## drylin® R pillow blocks | metric

**Open aluminum adapters, long design**
OJUM-06
▶ Page 1298

**Open aluminum adapters, with manual clamp**
OJUM-06-XX-HK
▶ Page 1299

**Open, adjustable aluminum adapters, long design**
OJUME-06
▶ Page 1300

## drylin® R pillow blocks

**Quad blocks, closed design**
RQA
▶ Page 1306

**Quad blocks, open design**
OQA
▶ Page 1307

**Closed tandem design**
RTA
▶ Page 1308

**Open tandem design**
OTA
▶ Page 1309

## drylin® R shafts | metric

**Precision aluminum shafts**
AWMP/AWMR
▶ Page 1328

**Supported aluminum shafts**
AWMU
▶ Page 1329

**Steel shafts**
SWM/SWMH
▶ Page 1330

**Supported steel shafts**
SWUM/SWUMN
▶ Page 1331

## drylin® R shafts | metric

**Low level partially supported stainless steel shafts**
EWUMN-/EWUMSN-ES
▶ Page 1338

**Carbon fiber shafts**
CWM
▶ Page 1340

## drylin® R shafts supports

**Shaft end supports, floating**
TA
▶ Page 1341

**Shaft end supports, fixed**
TAF
▶ Page 1342

**Closed aluminum pillow block, long design**
RJUM-06
▶ Page 1294

**Closed aluminum pillow block, with manual clamp**
RJUM-06-XX-HK
▶ Page 1295

**Closed housings, floating bearings**
RJUM-06-XX-LL
▶ Page 1296

**Open housings, floating bearings**
OJUM-06-XX-LL
▶ Page 1297

## drylin® R flanged pillow blocks | inch / metric

**Closed aluminum pillow block, round flange**
FJUM-01
▶ Page 1301

**Closed aluminum pillow block, square flange**
FJUM-02
▶ Page 1302

**Closed aluminum pillow block, round flange, tandem design**
FJUIT-01 / FJUMT-01
▶ Page 1303

**Closed aluminum pillow block, square flange, tandem design**
FJUMT-02
▶ Page 1304

**Closed, long design**

RGA
▶ Page 1310

**Open, long design**

OGA
▶ Page 1311

**Closed, short design**

RGAS
▶ Page 1312

**Open, short design**

OGAS
▶ Page 1313

**Stainless steel shafts**
EWM/EEWM/EWMR
▶ Page 1332

**Supported stainless steel shafts**
EWUM
▶ Page 1334

**Low level supported stainless steel shafts**
EWUMN
▶ Page 1335

**Partially supported stainless steel shafts**
EWUM-ES/EWUMS-ES
▶ Page 1336

**Shaft end blocks, standard design**
WA
▶ Page 1343

**Shaft end blocks, compact design**
WAC
▶ Page 1344

**Shaft end block, narrow design**
WAS
▶ Page 1345

**Flange shaft support**

**WAF**
▶ Page 1346

# drylin® linear technology | Product overview

## drylin® Q square linear guides

**Square section linear rails**

AWMQ

▶ Page 1352

**Adjustable linear carriages**

QWE-01

▶ Page 1353

**Adjustable linear carriages with manual clamp**

QWE-01-XX-HKA

▶ Page 1354

**Pillow blocks**

QJRM(T)-05

▶ Page 1355

## drylin® stop-motion preloaded linear guides

**Prism rails**

NSV

▶ Page 1362 / Page 1364

**Preload prism slide, standard design**

NWV-21-27-35

▶ Page 1363

**Preload prism slide, long design**

NWV-21-27-60

▶ Page 1365

**Pillow blocks, round, with spring preload**

WJ200UM-01-XX-P40

▶ Page 1366

## drylin® digital measuring systems

**Integrated measuring systems for drylin® Q**

QKM

▶ Page 1376

**Ready-to-install measuring systems for drylin® SLW linear modules**

SLWM

▶ Page 1377

**Digital measuring system for drylin® W**

WKM2

▶ Page 1378

**Measuring system with positionable readout display for drylin® W**

WKMEDR

▶ Page 1379

**Fixed flange bearings with round flange:**
QJFM(T)-01
▶ Page 1356

**Fixed flange bearings with square flange:**
QJFM(T)-02
▶ Page 1356

**Solid plastic linear bearings**
QJRMP-01
▶ Page 1357

**Accessories for drylin® Q**
▶ Page 1358

**Measuring systems with rail scale**
NKV-27-MES
▶ Page 1368

**Prism module for precise adjustment**
SLNV
▶ Page 1369

**Telescopic rails with locking mechanism**
NT-LM-35
▶ Page 1370

**Measuring systems for external data output for drylin® W**
WKMEX
▶ Page 1380

## drylin® carbon fiber

**Extremely lightweight linear guides**
WSPC, WWPL
▶ Page 1386

**Non-metallic toothed belt axis**
ZLW-XX-P
▶ Page 1387

**Linear module with carbon fibre high profile**
SAW-XX-P
▶ Page 1388

**Linear module with carbon fibre hollow shaft**
SHTP-XX-CWM
▶ Page 1389

## drylin® stainless steel

**Closed, inch stainless steel (303) adapters**
RJUI-01-ESR
▶ Page 1393

**Closed, metric stainless steel (303) adapters**
RJUM-XX-ES
▶ Page 1395

**Stainless steel guides, single/double rails**
WS-XX-ES-FG
▶ Page 1396

**Pillow blocks, made from 316 stainless steel**
WJUM-XX-ES-FG
▶ Page 1397

## drylin® stainless steel

**Low level supported stainless steel shafts**
EWUMN
▶ Page 1409

**Partially supported stainless steel shafts**
EWUM-ES/EWUMS-ES
▶ Page 1410

**Low level partially supported stainless steel shafts**
EWUMN
▶ Page 1412

**Stainless steel linear modules**
SHT-ESJ
▶ Page 1414

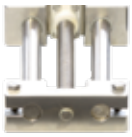
**Carbon fiber hollow shafts**
CWM
▶ Page 1390

**Hybrid roller bearings made of stainless steel**
WJRM-01/WJRM-21
▶ Page 1398

**Assembled stainless steel guide carriages, round**
WW-XX-GESG-PES
▶ Page 1400

**Stainless steel shafts**
EWM/EEWM/EWMR
▶ Page 1402

**Supported stainless steel shafts**
EWUM
▶ Page 1404



**“Hygienic design” linear module**
SHTC-XX-HYD
▶ Page 1415

**Stainless steel linear modules**
SLW-ES
▶ Page 1416

**XY-tables Stainless steel version**
SLW-XY-ES
▶ Page 1417

**Reverse modular axes**
ZLW-20
▶ Page 1418


# Self-lubricating drylin® linear guides

drylin® is a product range of self-lubricating linear plain bearings based on the principle of sliding instead of rolling. Tribologically optimized iglide® high-performance polymers are used as sliding surfaces. The drylin® linear systems use dry operation and are maintenance-free.
Besides the freedom from maintenance and external lubrication, the ruggedness and insensitivity to influences such as dirt, water, chemicals, heat or impacts, makes them ideal in many applications.

- Self-lubricating and resistant to dust and dirt
- High static load capacity
- Light, quiet and clean
- Durable and cost-effective

**Typical application areas**

- Lab and medical equipment
- On-board marine, aircraft, and automotive
- Kiosks
- Automation and robotics
- Packaging machinery
- Furniture

**Available from stock**
Detailed information about delivery time online.

**Price breaks online**
No minimum order value. No minimum order quantity.

## drylin® rail guides

### drylin® W profile guides

- Highly flexible, modular systems with 14 different profiles and more than 50 carriage options
- Versatile
- Easy installation

### drylin® N low-profile linear guides

- Low profile installation heights from 6 to 12mm
- Lightweight
- Many carriage options – also with preload

### drylin® T rail guides

- Same dimensions as ball guide systems
- Adjustable bearing clearance
- Automatic clearance adjustment available
- High static load capacity

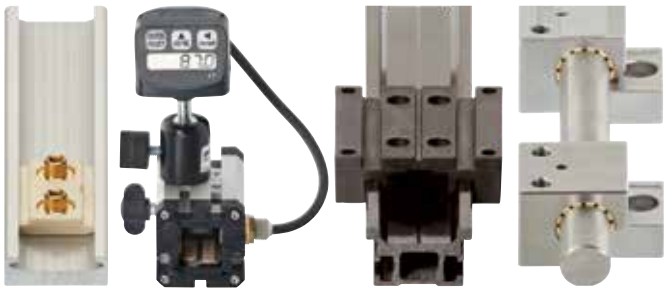
## drylin® shaft guides

### drylin® R shaft guides

- Same dimensions as recirculating ball bearings
- For all shaft materials
- Lightweight
- Replaceable liners

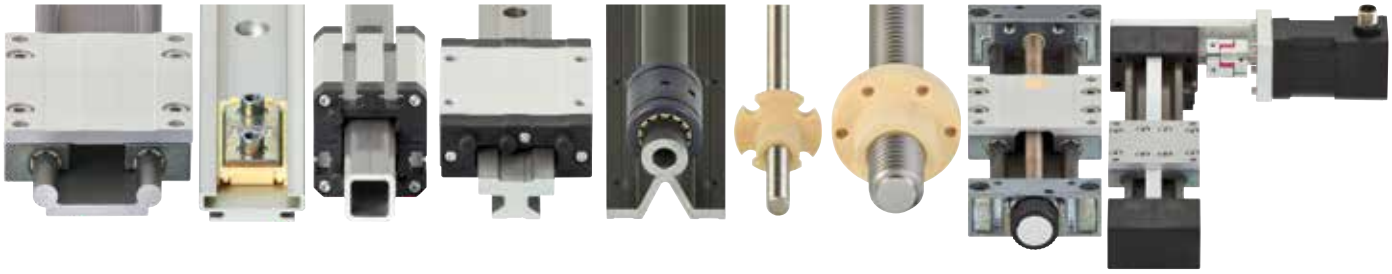
### drylin® Q square linear guides

- Self-lubricating, torque-resistant square linear guides
- Lightweight profiles made from hard-anodized aluminum
- Manual adjustable carriages with/without manual clamp
- Numerous fastening options

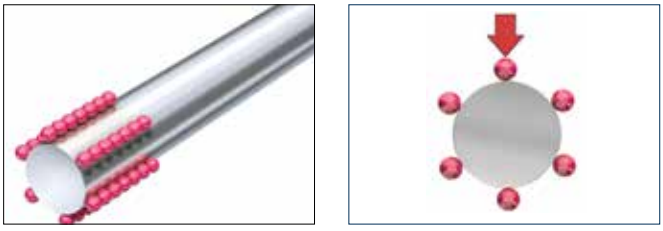


**Stop motion linear guides**
**Measuring systems**
**Carbon fiber**
**Stainless steel**

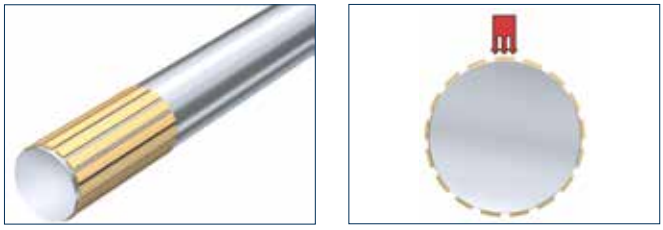
# drylin® linear technology | Slides instead of rolling!



- Maintenance-free
- Wear-resistant
- Resistant to impacts and vibrations
- Corrosion-free
- Resistant to dirt, dust and humidity
- Low coefficient of friction
- Weight reduction
- Dry operation
- Suited for short-stroke applications
- High static load capacity
- High speeds and accelerations possible
- Self-lubricating
- Extremely quiet operation
- Low magnetism



**Rolling bearings – Point contact**



**Plain bearings – Surface contact**

**Resistant to dirt, dust and moisture – By lubrication free insert and dirt channels.**

## Optimum load distribution

drylin® linear plain bearings operate on sliding elements unlike the traditional recirculating ball bearing systems. This gives a larger contact surface resulting in lower surface pressure. This leads to advantages which include:

- The use of non-hardened shafts
- The use of non-metallic shafts
- Scratching and shaft damage is completely excluded

## Shafts and rail materials

The large surface area of drylin® linear plain bearings, when compared to traditional ball bearings, means that under a given load the bearing pressure is greatly reduced. This allows soft shaft materials to be used, including hard-anodized aluminum, which in turn gives additional benefits in friction and wear rate values, carbon fiber shafts, which offer the lightest option and stainless steel for the highest chemical resistance. Hardened steel and stainless steel shafts as well as hard-chromed shafts can also be used with drylin® linear bearings.

## Dry operation, without lubrication

drylin® linear bearing systems are designed for dry operation. As there is no grease or oil present, the application tends to naturally self clean, any particles are wiped away from the sliding surface by the ribbed design of the drylin® polymer bearing. This works well in coarse dirt or even sand. Particles are repelled from the contact surface by the movement itself. Here the front of the sliders works like a wiper. The contact surface remains clean.

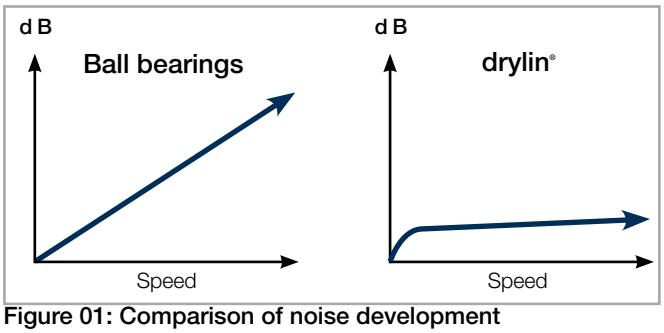
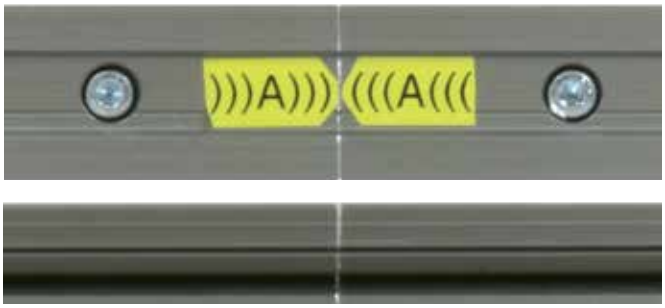



**Figure 01: Comparison of noise development**

## Quiet

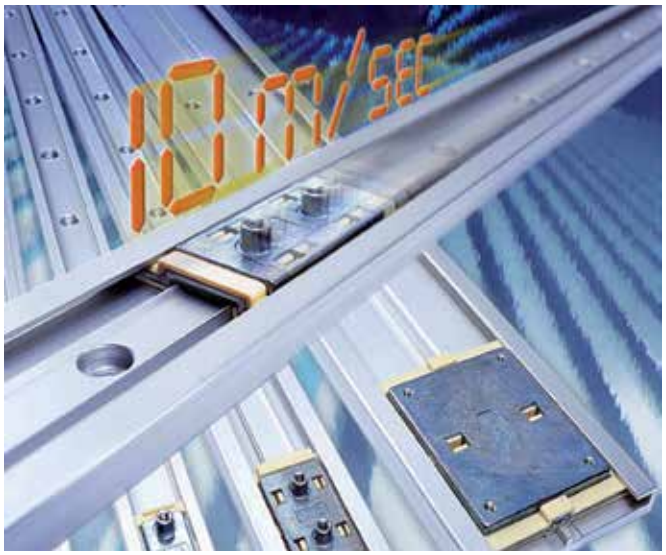
The quiet operation is also a benefit of sliding rather than rolling. There are no loud collisions between a hard steel ball and the shaft or rail. The sliding motion is extremely quiet and only a light friction noise is audible.



**Track joint**

## Maximum stroke lengths

The joining or butting-up of multiple rails is easy with drylin®. The guide rails are slightly chamfered, aligned and simply mounted against each other. The joint can be passed over by the sliding element without problems. Assembly is simplified by the distinctive joint marking provided at the factory.



| Thermal conductivity | [W / m · K] |
|---|---|
| Aluminum | 235 |
| Unalloyed steel | 48–58 |
| High-alloyed steel | 15 |

**Table 01: Thermal conductivity**

## Permitted speeds/acceleration

drylin® linear plain bearings slide instead of roll. This makes the bearing independent of the mass inertia of this body and can be used with high speeds up to 10m/s and accelerations up to 100g.

drylin® linear bearings are especially suitable for applications with light loads with high speeds. The use of hard-anodized aluminum guide rails lowers the operating temperature in the bearing due to the high thermal conductivity of aluminum. This is an advantage with very short stroke application.

The maximum average surface speed results from the load on the bearings. With decreasing surface load, higher speeds can be achieved. More important than the maximum speed reached is the average speed over a period of time, because this has the most influence on the heating of the bearing system. In cases with breaks between the individual cycles, the maximum average surface speed is / critical, which is achieved during a period of 10 to 30 minutes.

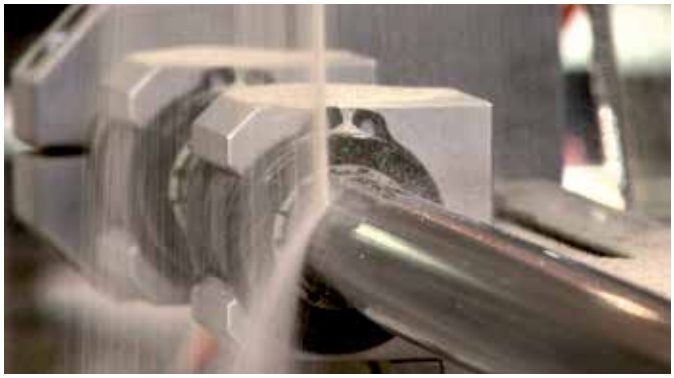
## Average surface speed

= Travel distance per cycle [m] / total cycle time [sec].

Extreme application conditions in the offshore industry

Filling machine, Krones AG, Rosenheim

The iglide® X material in heavy-duty use under high temperatures in foundries



Self-lubricating and resistant to dirt

## Corrosion resistance

The low humidity absorption of drylin® bearings and liners permit their use for underwater applications. The use of stainless steel or anodized aluminum shafts provides for a corrosion-resistant shaft partner. Anodized aluminum is resistant to neutral chemical substances, with a pH between 2 and 7. For special applications separate tests are recommended.

## Chemical resistance

iglide® J is resistant to weak acids, diluted alkalis as well as to fuels and all types of lubricants. The intensive cleaning of machines with standard commercial cleaning agents, even in the food industry, is no problem for drylin® guides. For applications in environments with more aggressive cleaning agents, the use of the drylin® R or W bearings with iglide® X liners is recommended. The resistance of linear bearing systems is equally dependent on the shaft or rail material. For the highest resistance to chemicals, a 304 or 316 stainless shaft material is optimal.

## Operating temperatures

Sliding elements made from iglide® J and J200 can be used in the temperature range between -58°F and +194°F (-50 and +90°C). In applications with aluminum shafts or rails, distinctly higher loads and speeds can be attained due to the excellent thermal conductivity. Sliding elements made of iglide® X can be used in temperatures ranging from -148°F to 482°F (-100°C to +250°C).

## Resistance to dirt

Applications exposed to coarse dirt and sand are possible since debris is wiped away by the sliding of the plain bearing. The lack of required external lubrication means that seals are not required as there is no grease or oil to attract dust and dirt.

## Hard anodized surfaces

For drylin® systems using iglide® J or J200 hard anodized shafts have optimized wear properties, high chemical resistance, and a high degree of hardness. Color alterations and slight crazing of the anodized surface may occur, but do not alter the wear resistance, corrosion resistance, or bearing properties. Cut surfaces will not be coated. If this is required please contact igus®.

# drylin® linear technology | Slides instead of rolling!

| |  The All-rounder – iglide® J |  The specialist – iglide® J200 |  The extreme – iglide® X |  The endurance runner – iglide® E7 |  The FDA-compliant – iglide® A180 |  Blue Sky Thinking FDA/EU-compliant – iglide® A160 |
|---|---|---|---|---|---|---|
| **Application temperature** | from –58°F to +194°F (-50°C to +90°C) | from –58°F to +194°F (-50°C to +90°C) | from –148°F to +482°F (-100°C to +250°C) | from –58°F to +158°F (-50°C to +70°C) | from –58°F to +194°F (-50°C to +90°C) | from –58°F to +194°F (-50°C to +90°C) |
| **Best coefficient of friction with** | Steel shaft | Hard-anodized aluminum | Hard-chromed steel | Steel/stainless steel shaft | Stainless steel shaft | Hardened stainless steel shafts |
| **Volume resistance** | > $10^{13}$Ωcm | > $10^{8}$Ωcm | < $10^{5}$Ωcm | > $10^{9}$Ωcm | > $10^{12}$Ωcm | > $10^{12}$Ωcm |
| **Moisture absorption** | 1.3% weight | 0.7% weight | 0.5% weight | < 0.1% weight | 0.2% weight | < 0.1% weight |
| **Maximum service life with** | Hard-anodized aluminum | Hard-anodized aluminum | Hardened stainless steel | Steel/stainless steel shaft | Stainless steel shaft | Hardened stainless steel shafts |
| **Potential counter partner** | All shaft materials | Hard-anodized aluminum | Hardened stainless steel | Steel/stainless steel shaft | All shaft materials | Stainless steel |
| **Permissible stat. surface pressure** | 5,076 psi | 3,336 psi | 21,760 psi | 2,611 psi | 4,061 psi | 2,176 psi |
| **Part No.** | JUI /JUM-... | J200UI / J200UM-... | XUI / XUM-... | E7UI / E7UM-... | A180UM-... | A160UM-... |

## Ideal material combinations

### iglide® J:

- Maintenance-free, dry running
- Low coefficients of friction with all materials
- Excellent wear resistance
- Very low humidity absorption

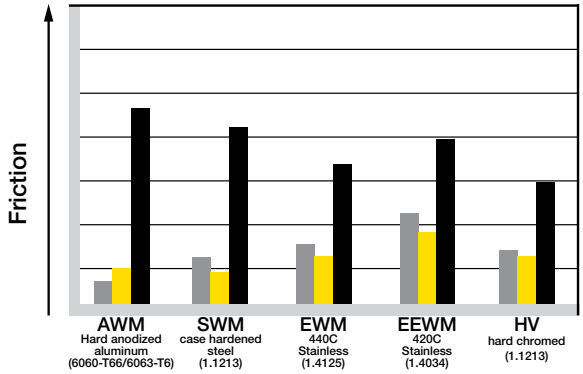
### iglide® J200:

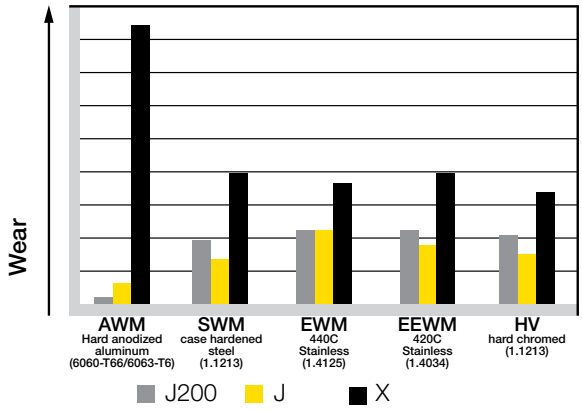
- Completely maintenance-free
- Extremely high service life on hard-anodized aluminum
- Low coefficients of friction with hard-anodized aluminum
- Excellent wear resistance with anodized aluminum

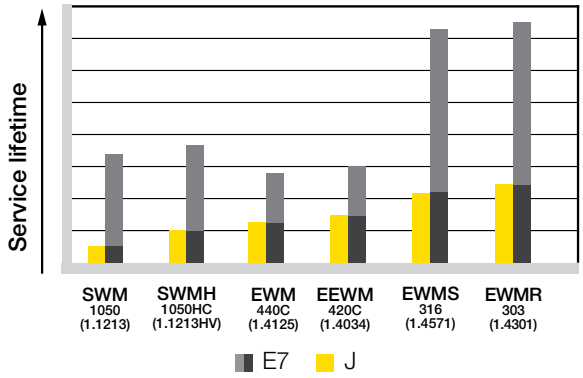
### iglide® X:

- Completely maintenance-free
- Temperature resistance -148°F to 482°F (-100°C to +250°C) in continuous operation
- Universal resistance to chemicals
- Very low humidity absorption

Other possible materials:
**iglide® A180** FDA-compliant



# drylin® linear technology | Product selection

| | Sizes | Self-lubricating and quiet operation | Dimensionally interchangeable with recirculating ball bearings | Profile rails | Shafts | Square profiles | Single pillow block | Complete carriage | Hybrid roller bearing |
|---|---|---|---|---|---|---|---|---|---|
| drylin® W | 5 | ● | | ● | | | ● | ● | ● |
| drylin® N | 4 | ● | | ● | | | | ● | |
| drylin® Q | 3 | ● | | | | ● | ● | ● | |
| drylin® T | 4 | ● | ● | ● | | | | ● | |
| drylin® T mini | 4 | ● | ● | ● | | | | ● | |
| drylin® R | 12 | ● | ● | | ● | | ● | | |

| | Loads > 100 kg | High durability under shock loads | Resistant to dirt | Compact, space-saving | Particularly light weight | Torque-resistant | Torsionally stable | Unsupported installation |
|---|---|---|---|---|---|---|---|---|
| drylin® W | ✚ | ✚ | ✚✚ | ✚ | ✚ | ✚ | ✚✚ | ✚ |
| drylin® N | | | ✚ | ✚✚ | ✚✚ | ✚ | | |
| drylin® Q | | | ✚ | ✚ | ✚ | ✚✚ | ✚ | ✚✚ |
| drylin® T | ✚ | ✚ | ✚ | | | ✚ | ✚ | |
| drylin® T mini | | | ✚ | ✚✚ | ✚✚ | ✚ | | |
| drylin® R | ✚✚ | ✚✚ | ✚✚ | | | | | ✚ |

| | Manual adjustable bearing clearance | Automatic adjustable bearing clearance | Automatic preload | Floating bearing function | Manual clamp | with measuring system | with lead screw drive | with toothed belt drive |
|---|---|---|---|---|---|---|---|---|
| drylin® W | ✚ | | | ✚ | ✚ | ✚ | ✚ | ✚ |
| drylin® N | | | ✚✚ | ✚ | ✚ | | ✚ | |
| drylin® Q | ✚ | | | | ✚ | ✚ | | |
| drylin® T | ✚ | ✚ | | ✚ | ✚ | | | |
| drylin® T mini | ✚ | | | ✚ | | | ✚ | |
| drylin® R | | | | ✚ | | | ✚ | |

| | Stainless steel components | Temperatures above +194°F | Chemical-resistant | FDA-compliant | Cleanroom and ESD | Door/control panel adjustments | Camera slider | 3D-print components |
|---|---|---|---|---|---|---|---|---|
| drylin® W | ✚✚ | ✚✚ | ✚✚ | ✚✚ | ✚ | ✚✚ | ✚✚ | ✚✚ |
| drylin® N | | ✚ | | | ✚ | ✚ | ✚ | ✚✚ |
| drylin® Q | | | | | ✚ | | | |
| drylin® T | | ✚ | | | ✚✚ | | | |
| drylin® T mini | | | | | ✚ | ✚ | | ✚✚ |
| drylin® R | ✚✚ | ✚✚ | ✚✚ | ✚✚ | ✚ | | | ✚✚ |

✚ suitable ✚✚ particularly suitable

| Aluminum profiles | |
|---|---|
| | Aluminum, extruded section according to EN AW 6061/6060/6063 |
| **Shafts and rail profiles** | **Surfaces** |
| **drylin® W, drylin® T[155], drylin® R, drylin® Q** | hard-anodized, bare surface |
| **drylin® N, profile with CA marking** | clear-anodized, bare surface |
| **drylin® N, profile with AR marking** | black-anodized (anti-reflect), bare surface |

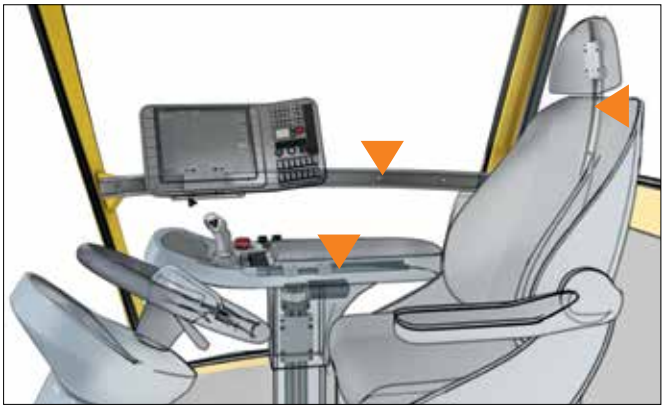
[155] **Exception: TS-11-20 clear-anodized**

| Profile straightness tolerances | |
|---|---|
| **Shafts AWI** | 0.004”/ft |
| **Shafts AWMP / AWMR** | DIN 754-3; 2mm/m, local 0.6mm/300mm |
| **Profile rails AWMU / AWMQ, WS / NS / TS** | DIN EN 12020-2<br>Total length up to 1,000mm; Straightness 0.7mm<br>Total length up to 2,000mm; Straightness 1.3mm<br>Total length up to 3,000mm; Straightness 1.8mm<br>Total length up to 4,000mm; Straightness 2.2mm |

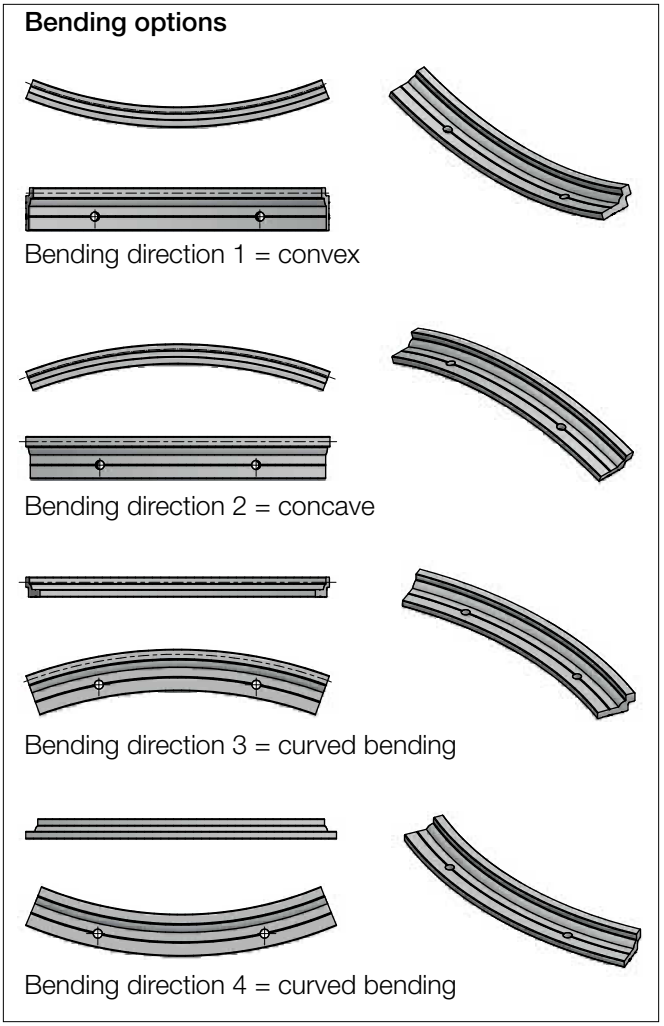
## drylin® curved linear guide profiles

igus® provides standard and customized curved rails for the drylin® W product range. This is especially for the requirements in operating ergonomics, such as guiding monitors and control systems in a radius to ensure safe and easy accessibility.

- Self-lubricating drylin® W carriages for curved rails
- Variable profile directions
- Torque-resistant alternative to curved tube profiles
- Bending option depending on the radius, rail length, bearing/carriage and mounting
- Customized project service



**Curved drylin® linear technology – for ergonomic operation and optimal field of view**




**Different radii and bending directions available upon request**

## 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 as 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

**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.

## Eccentric 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.

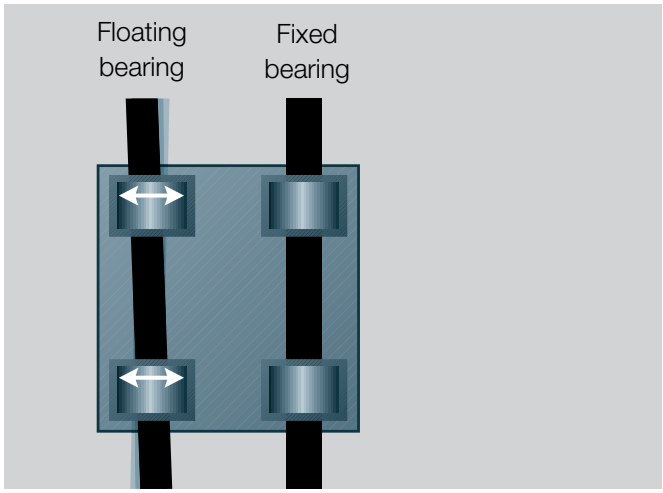



Figure 02: Automatic compensation of parallelism errors

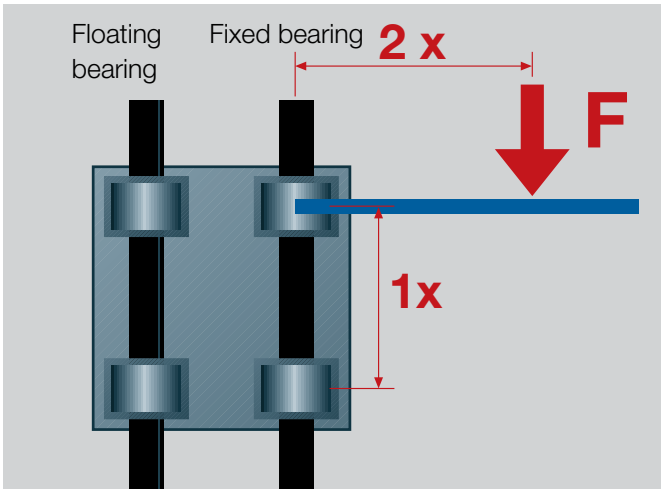



Figure 03: The 2:1 rule

## Tightening torque for drylin® metallic screws

| Metric thread (Da) | Tightening torque [Nm] | Recommended tightening torque [Nm] |
|---|---|---|
| **M3** | 0.5 – 1.1 | 0.7 |
| **M4** | 1.0 – 2.8 | 1.5 |
| **M5** | 2.0 – 5.5 | 3.0 |
| **M6** | 4.0 – 10.0 | 6.0 |
| **M8** | 8.0 – 23.0 | 15.0 |
| **M10** | 22.0 – 46.0 | 30.0 |

**Please be aware of the minimal screw-in depth for aluminum and zinc die-casting parts: 1.5 x Da**

# Cleanroom suitability and ESD compatibility of drylin®

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 following drylin® guides from igus® were tested: 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® GmbH, 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® GmbH, 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® NK-02- 40-02 can be classified as "level 1" (Highest rank). See Fraunhofer IPA Report No.: IG 0308-295 73.

IPA Fraunhofer TESTED® DEVICE
igus Energieführungsketten/ Lineargleitführung
Report No. IG 0308-295

**Linear guide system drylin® TK-01-25-02**

"For the linear guide system drylin® TK-01-25-02 by igus® GmbH, 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® GmbH, 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.