# drylin Linear Guides — Lube-Free Polymer Bearings, Profile Families and Where They Beat Ball Rails

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How igus drylin replaces recirculating-ball rails with gliding polymer liners — zero lubrication, washdown-proof, dirt-tolerant — the W/T/N/Q profile family logic with stocked examples, the ZLW belt-drive axes, the honest trade-offs (friction, stick-slip) and the drive/accessory ecosystem.

## Gliding, not rolling — and why that sells

drylin guides run high-performance polymer liners sliding on anodised aluminium or steel rails: no balls, no raceways, no lubricant anywhere. The consequences stack up in dirty and wet plants — washdown and chips cannot wash grease out or jam recirculation tracks, the guides run silent, FDA-adjacent and food-side friendly, and maintenance is literally zero until the liner (a cheap replaceable part) wears to its limit. The price is honest too: higher friction than balls (drive forces up), modest speed/load ceilings against big ball rails, and the possibility of stick-slip on badly matched loads — which is why the family wins packaging, furniture-of-machines, format adjustment and harsh-washdown axes, and loses machine-tool feeds.

## Profile families in the stocked range (639 rows)

Family | Shape | Stocked example |

drylin W | The modular workhorse: double-round-edged profile rails, carriages from miniature up | W miniature carriage WW-06-20 |

drylin T | Heavy-duty profile-rail pattern (ball-rail footprint), with and without clearance adjustment | T heavy-duty carriage TW-02-20 |

drylin N / Q | Low-profile N and anti-rotation square-shaft Q | Q square profile AWMQ-10 |

drylin C | Compact die-cast-zinc carriage pattern | C carriage CW-3030 |

ZLW axes | Complete belt-driven linear modules on drylin guides | ZLW mounting bracket AK-0037 |

Mounting hardware is its own aisle — slot nuts, brackets, shaft supports — and the belt axes couple to steppers/gearmotors through standard interfaces (coupling guide; NEMA and IEC motor flanges per the frame chart).

## Selection and the stick-slip clause

Size by load per carriage and moment loads — plain bearings love distributed load and hate single-point moments; two short carriages beat one long one under tilting loads.

The 2:1 rule: on a single rail, the drive force must act within twice the bearing length from the rail or the carriage cocks and binds — the most common drylin commissioning call, solved by moving the drive line or adding the second rail.

Dry means dry: never grease a drylin liner — lubricant binds dust into lapping paste and reverses every advantage. The polymer carries its own solid lubricant.

Liners are the service part: carriages re-line in place; rails outlive several liner sets unless scored.

Replacement and new-axis enquiries quote within 24 hours from the printed part code (the stocked rows' WW/TW/CW codes identify family-size-variant) or from stroke, load, orientation and speed — under the igus brand page.

Frequently asked questions
Do drylin guides really need no lubrication at all?None, ever — the liner polymer carries embedded solid lubricant, and adding grease actively harms it by binding dirt into an abrasive. 'Maintenance' is replacing the liner when wear reaches its limit, a minutes-long job.When should I choose polymer guides over ball rails?Dirt, washdown, chemicals, silence, zero-maintenance mandates and moderate speeds/loads — packaging lines, adjustment axes, medical and food machines. Precision machine-tool feeds with high stiffness and lowest friction stay with recirculating balls.What is the 2:1 rule on linear plain bearings?The drive force must engage within a 2:1 ratio of the bearing's length to its offset from the rail — push a carriage from too far away and it cocks and sticks regardless of force. Re-route the drive line or widen the bearing base.Why does my slide judder at low speed?Classic stick-slip: load, liner and speed in the wrong triangle — usually a moment load pinching one liner edge or an offset drive violating the 2:1 rule. Fix geometry first; igus liners also come in low-stick grades.Can I replace just the sliding elements in a drylin carriage?Yes — liners are catalogue spare parts and the point of the design: carriage body and rail survive several liner generations. Score marks on the rail's running faces are the one thing that condemns the rail itself.

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