

# Forklifts

Solutions for forklifts  
and industrial vehicles



plastics for longer life®

igus®.eu...

[www.igus.eu/forklift](http://www.igus.eu/forklift)



## 100% lubrication-free for forklifts

Your technical innovator and cost reducer,

**Christian Strauch**

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[www.igus.eu/forklift](http://www.igus.eu/forklift)

**igus® solutions for forklifts and industrial vehicles. Lubrication-free and maintenance-free, high service life, lifetime predictable online!**

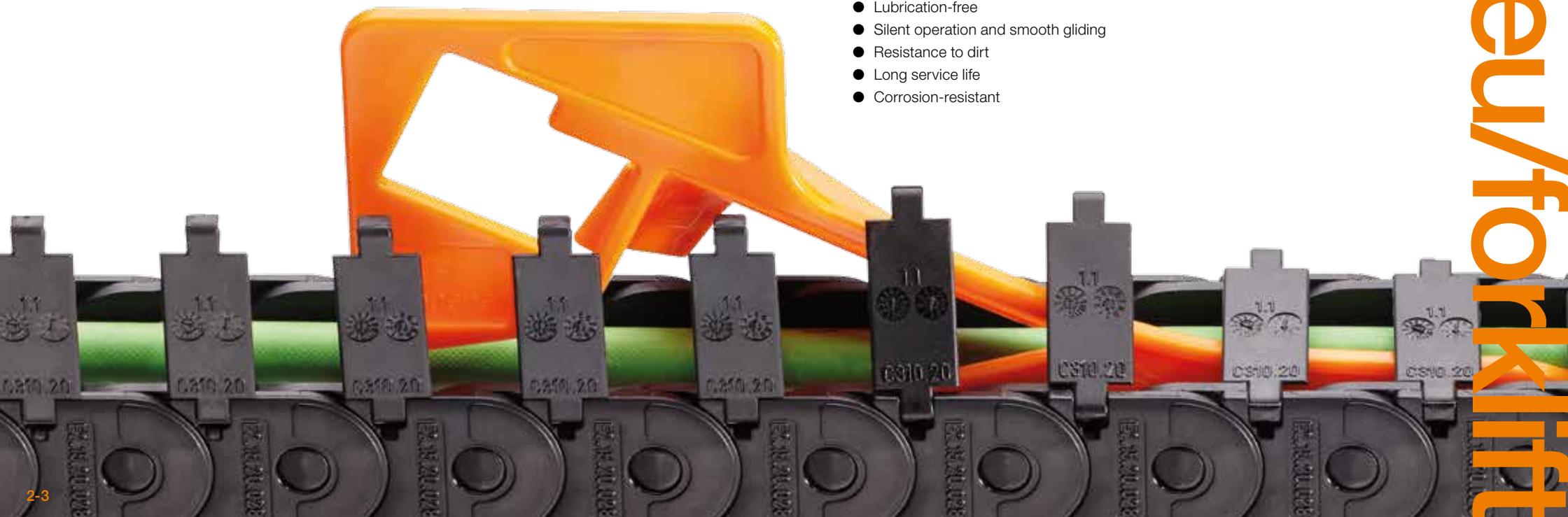
In this brochure you will find technical components made of high performance polymers, important for forklifts and other industrial vehicles. We also offer a huge range of cables for movement in energy chains®, and also directly on or in the forklift. Not always visible from outside, but already a proven technology: there are several places in the forklift where igus® products are already being used successfully.

From igus®, you will receive a technically better solution with a longer service life or a product that is considerably more cost-effective than items you have previously purchased. Change over now to our plastic bearings for an up to 40% cost saving and a 60% weight saving. From the No. 1 for cables in e-chains®, you will be supplied with the most cost-effective cable that is guaranteed to do its job or you can choose from our 90,000 types of e-chain® for easy and safe energy supply.

For further information and application examples relating to forklifts and industrial vehicles, go to our website at: [www.igus.eu/forklift](http://www.igus.eu/forklift)

### Advantages of motion plastics® in forklifts:

- Lubrication-free
- Silent operation and smooth gliding
- Resistance to dirt
- Long service life
- Corrosion-resistant



[www.igus.eu/forklift](http://www.igus.eu/forklift)

# motion? plastics! – Our drive? Plastic!

**motion? plastics! Tribologically optimised machine parts made of plastic for all kinds of movements.**

Our slogan can be translated thus. We have been pursuing this idea passionately for more than 50 years. Plastic is light, robust, cost-effective and has low friction. Maintenance? Equal to zero, because our products are without any additional lubrication, show little wear and hardly cause downtimes. We make precise service life prediction with our online tools – simply enter the technical data of your particular application.

## Ultra-smooth dry operation

It all sounds very easy but, in fact, it is the result of a great deal of intensive work. Plastics must possess some very specific properties so that they can operate smoothly without any lubrication. We created them with the help of tribology, i.e. the study of friction, analysing the wear and friction characteristics of plastics, combining different polymers with each other and then testing the resulting products for their practicability. What we ended up with were "tribo-optimised" high-performance plastics – low-friction, resilient and long-lasting materials that make your machines more reliable and efficient. In our catalogue, there are more than 50 different plastics to choose from, 16 of which we offer as part of our full range of products.

## Technical design without limits

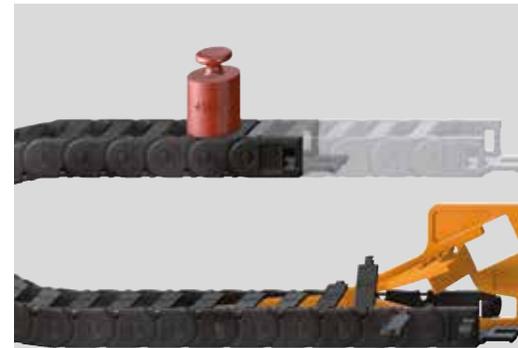
"Greater design freedom and flexibility" – what company founder Günter Blase succinctly pointed out as a fundamental ideal in the 1960s has now taken on a clear form after five decades of hard work: more than 100,000 modular and configurable products are currently supplied by igus® for technical designs without limits: energy chain systems® and matching cables, plastic, linear and spherical bearings, lead screw units, ball bearings, linear drive technology, bar stock, materials for 3D printing, liners as well as components for low-cost robotics.

## Convenient. Long life. Predictable.

To make life easier for users, all igus® components can be conveniently ordered in the online shop. There is no minimum order quantity and the goods will be sent to you with a short lead time. A further service: with the igus® online calculating tools, you can calculate the service life of your chosen component in your actual application. This is based on the data that we obtain in innumerable test cycles in the igus® test laboratory.



The 1965 idea:  
*"Show me the plastic part that gives you problem. I'll provide you with a solution!"*



**Small and resilient.**  
Our E2 micro e-chain® enables extremely small bend radii and inner heights. Perfect for seat adjustment in forklifts.



igus® research and test laboratory on a floor area of 2,750 square metres.



Change from ball bearings to igus® drylin® linear bearings. With drylin®, the machine has now been operating completely trouble-free for many years under the toughest conditions.

www.igus.eu  
forklift

# Always the right solution for forklifts and industrial vehicles

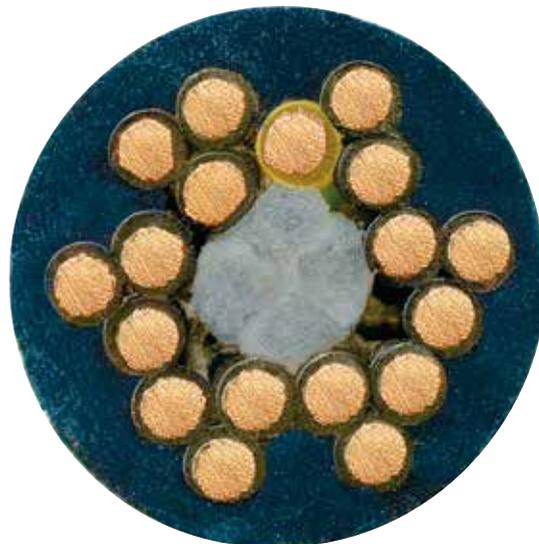
Less maintenance effort and costs for forklifts thanks to igus® high-performance polymers.

Defects, repairs or downtimes of industrial vehicles for maintenance purposes are annoying and incur costs when they have to be taken out of service. Robust and reliable components are therefore required in order to avoid downtime and thus lower unnecessary costs. Sounds as if "hard" materials should be used?

Wrong. The high-performance polymers and cables from igus® have been specially developed for dynamic applications and long service life and are able to withstand even high levels of stress. For example, iglidur® bearings are used in heavy-duty pivots and chainflex® cables are used for extremely small bend radii and large lifting heights in lifting gear.

Benefits of igus® high-performance polymers for industrial vehicles:

- No maintenance and no lubrication
- Long service life
- Tested in the test laboratory under realistic conditions
- Predictable service life
- Fast delivery
- UV and weather-resistant
- Especially durable
- Dirt-resistant
- Resistant to vibrations
- Individual custom-made products



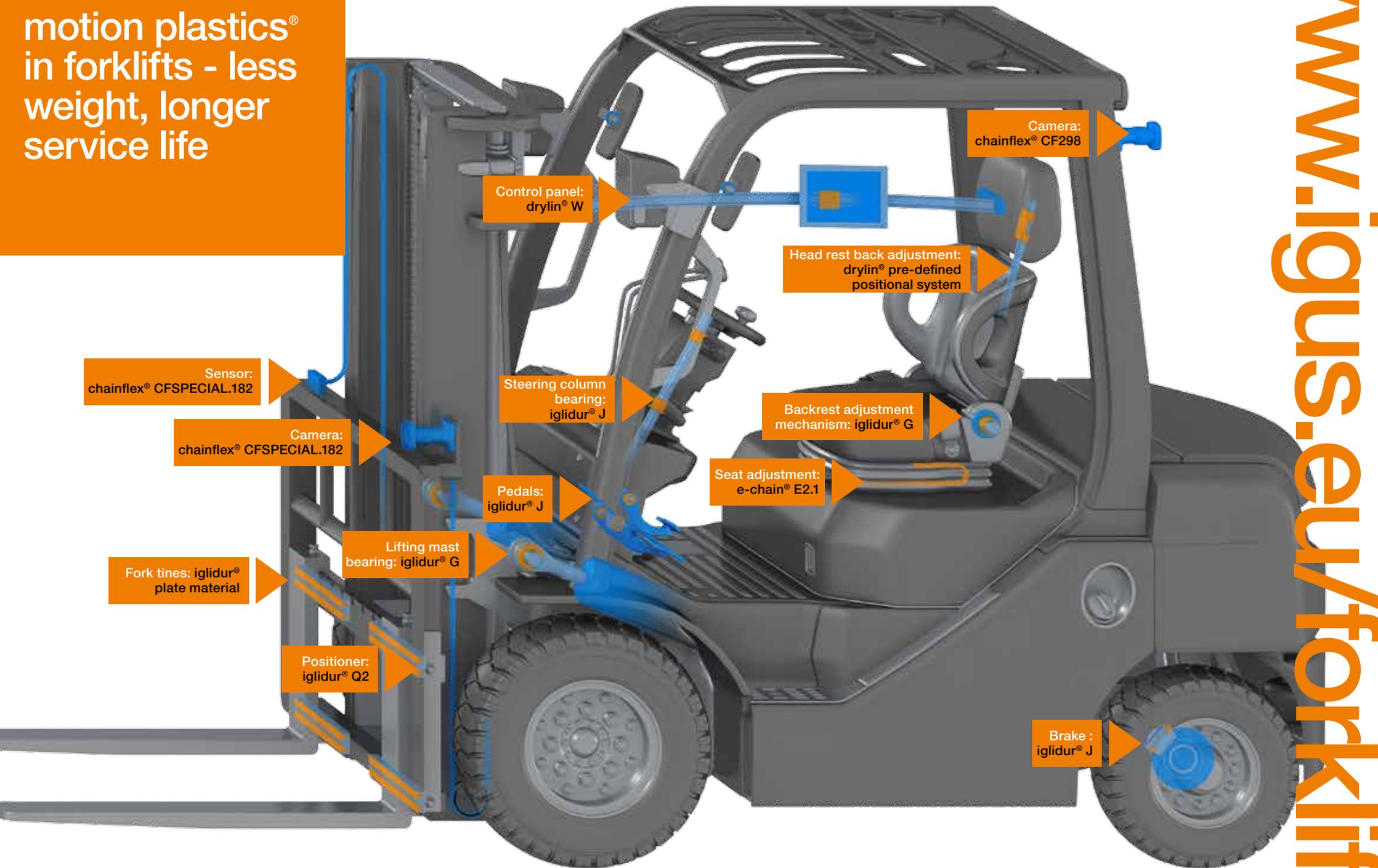
The braided in bundles chainflex® cables were developed especially for use in energy chains®.



In the case of high-performance equipment in narrow aisle warehouses, the driver is also lifted up into the air.

www.igus.eu/forklift

motion plastics<sup>®</sup>  
in forklifts - less  
weight, longer  
service life



www.igus.eu/forklift

# Smooth operating linear motion – from the steering wheel to the fork

## drylin® linear drives for Jungheinrich special forklifts

There is a lot of work for creative designers in the Jungheinrich plant in Lüneburg. This plant is responsible for special forklifts and modified serial-production devices, and manufactures a variety of industrial trucks that handle special tasks, such as transport of paper rolls. Lubrication-free linear drives from igus® are used in the special designs as needed – on the operator workstation and in the load-handling equipment.

The special forklift is used to "gather-in" trolleys in a large dairy facility and feed them into the washing system.





## Energy supplied perfectly with chainflex® in roller guides

In order to bring energy and signal cables to the housing of an order picking machine via the moving lifting rack with several guide rollers, the Still designers use an igus® chainflex® cable. This cable is not only suitable for applications with energy chains®, but rather it is also an ideal solution in roller guides. The EK-X type series of vertical order pickers are particularly impressive devices in Still's product range. Their task is to drive to those pallets in the narrow aisles of a high bay warehouse, from which the driver removes individual boxes. The article pickers achieve gripping heights of up to twelve metres.

The energy cables and signal cables in the lift frame, which are up to 12 m in length, are guided via guide rollers and move each time that the mast is lifted or lowered.

## iglidur® materials in fork tines: lubrication-free and clean

- From stock or machined special parts and sizes in 3 to 5 days
- Standard plastic bar stock: round bars and plate materials
- Predictable service life



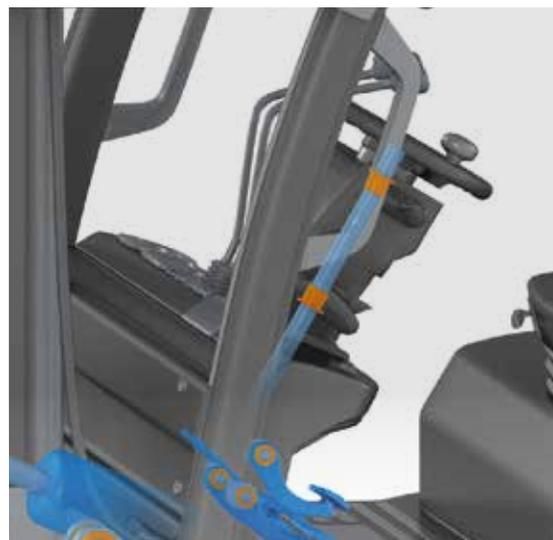
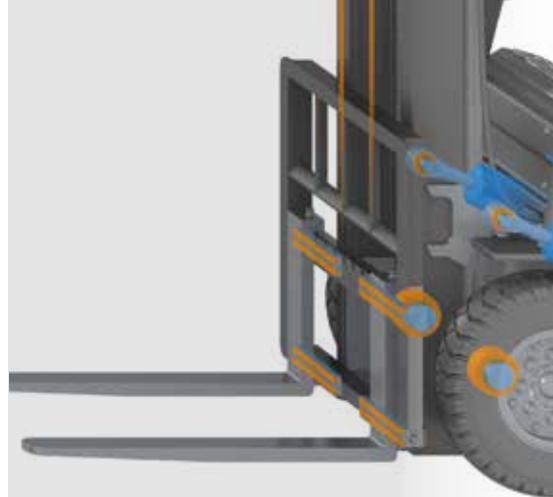
## drylin® W curved guide system: follow the curve with flexibility

- drylin® W carriage on curved rail
- Variable profile directions
- Torque resistant alternative to curved tube profiles



## iglidur® J in steering columns and pedals

- Excellent wear resistance on (virtually) all shafts
- Very low coefficients of friction
- Cost-effective and maintenance-free



www.igus.eu/forklift



## drylin® pre-defined positional systems in head-rests: light weight, defined positioning

- Easy movement with roller support
- Wide range of sizes and versions
- For exact re-positioning

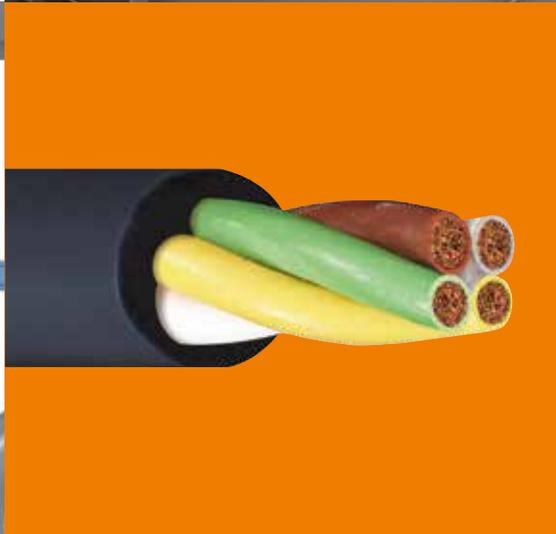
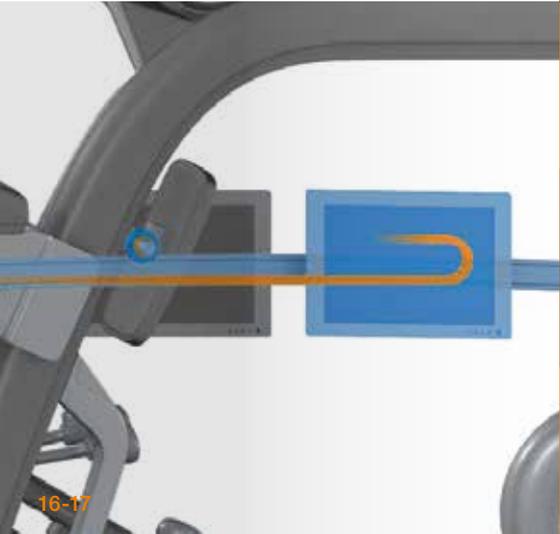
 [www.igus.eu/drylin](http://www.igus.eu/drylin)



## E2 micro e-chain® in seat adjustment mechanism: very small bend radii and inner heights

- Safe cable guidance
- Easy to open and quick assembly
- Quiet operation, stable and cost-effective

 [www.igus.eu/E2.1](http://www.igus.eu/E2.1)



## chainflex® cables in the control panel: for smallest installation spaces

- For extremely small radii and installation spaces either indoor or outdoor
- For hanging applications and high push-pull forces
- All chainflex® cables with a 36 month guarantee\* and numerous certifications - tested

 [www.igus.eu/chainflex](http://www.igus.eu/chainflex)

\*Avoid failures, guaranteed – more than 2 billion test strokes and 1.4 million electrical measurements per year. For more than 25 years, igus® has been carrying out tests in the industry's largest laboratory for moving cables and energy chains®.

## iglidur® G in tipping devices: lightweight and cost-effective

- Most popular iglidur® material worldwide
- High wear resistance
- Resistance to dust and dirt



[www.igus.eu/iglidur](http://www.igus.eu/iglidur)



## e-spool on scanners: safe and reliable guidance of scan unit

- For telescopic applications
- Always provides the correct length and tension of the energy supply system
- Space-saving alternative to zig-zag solution



[www.igus.eu/e-spool](http://www.igus.eu/e-spool)

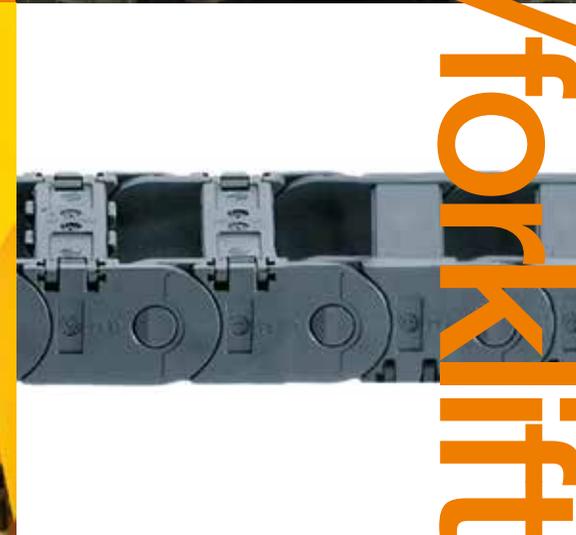
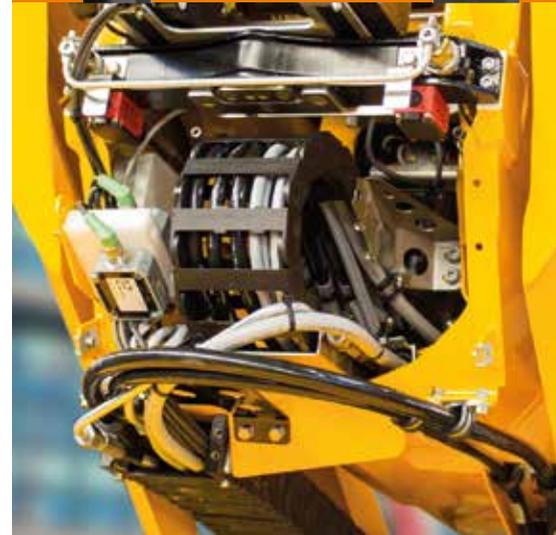


## e-chain® in special forklifts: safe and reliable cable guidance

- Cable protection for constricted installation spaces
- Very easy to open from the inside or outside
- Excellent mechanical stability



[www.igus.eu/E2000](http://www.igus.eu/E2000)



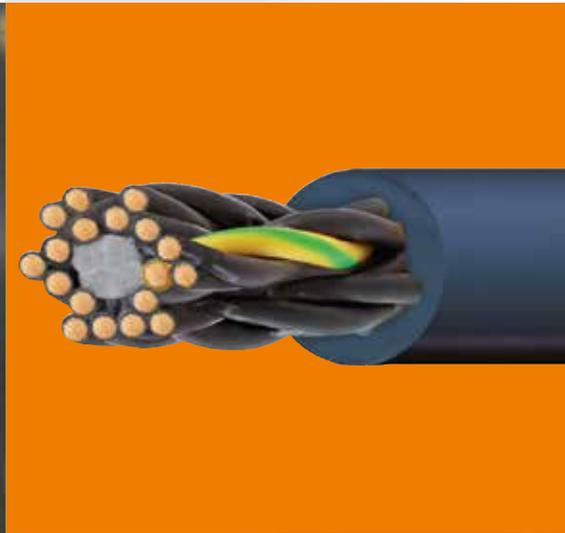
[www.igus.eu/forklift](http://www.igus.eu/forklift)



## iglidur® Q2 in positioners: high strength and main- tenance-free

- Resistant to high frequency shocks and vibrations
- Extreme wear resistance
- No 'stick slip'

 [www.igus.eu/iglidur](http://www.igus.eu/iglidur)



## chainflex® in lifting gear: guided by rollers

- For extremely small radii and installation spaces either indoor or outdoor
- For hanging applications and high push-pull forces
- On demand and qualification with 36 month guarantee\*

 [www.igus.eu/chainflex](http://www.igus.eu/chainflex)

\*Avoid failures, guaranteed – more than 2 billion test strokes and 1.4 million electrical measurements per year. For more than 25 years, igus® has been carrying out tests in the industry's largest laboratory for moving cables and energy chains®.



## PRT slewing ring bearings in drawbars: robust and main- tenance-free

- Ready-to-install and maintenance-free solution
- Tough and corrosion-resistant for high loads
- For use in changing environments

 [www.igus.eu/PRT](http://www.igus.eu/PRT)

## iglidur® G in lifting device: for reliable and safe lifting

- Smooth running with low coefficient of friction
- Reliable and maintenance-free
- Dirt-resistant



[www.igus.eu/iglidur](http://www.igus.eu/iglidur)

## drylin® SHT: optimum integration into motion sequences of the forklift

- Body material made from stainless steel, aluminium, zinc or plastic
- Lubrication-free through polymer bearings and nuts
- 3 shaft materials available



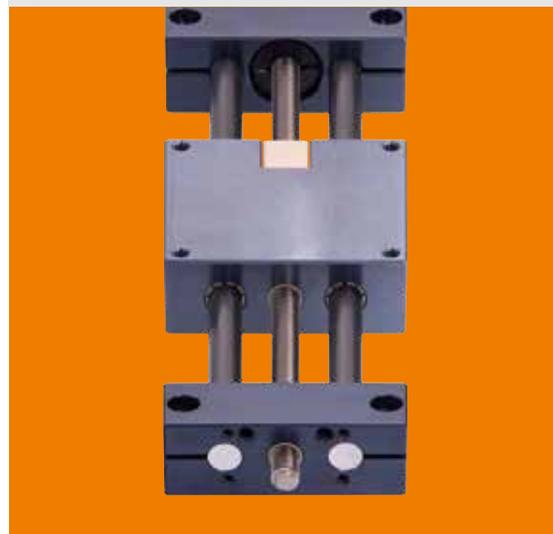
[www.igus.eu/drylin](http://www.igus.eu/drylin)

## drylin® WJRM in door holders: ergonomic operator control

- Quiet operation
- Dirt-resistant
- Corrosion-free



[www.igus.eu/drylin-hybrid](http://www.igus.eu/drylin-hybrid)



[www.igus.eu/forklift](http://www.igus.eu/forklift)

## Assembly



- Service for fast, error-free installation
- Specialised assembly personnel

[www.igus.eu/assembly](http://www.igus.eu/assembly)

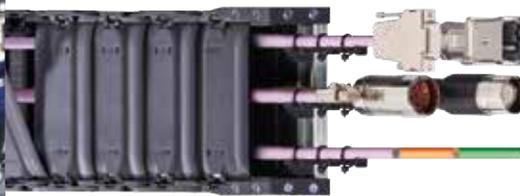
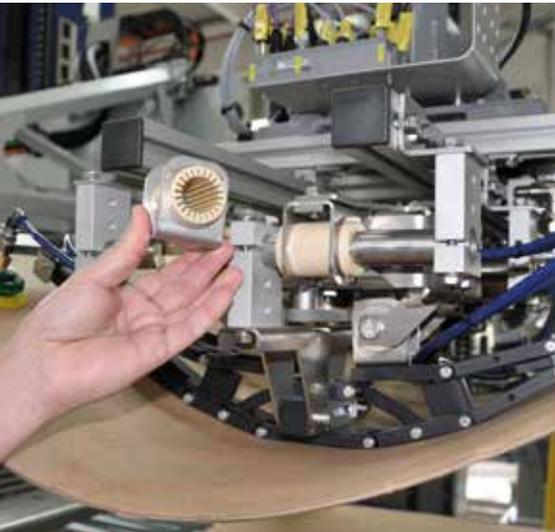


## Ready to install and industrially harnessed: [www.readychain.eu](http://www.readychain.eu)

Always the right harness for your application. Ready-to-assemble ready-chain® e-chainsystem® configured and delivered in 3-8 days.

Possible due to the large selection of energy chains® for all kinds of motion, cables for the e-chain® with 36 month guarantee plus the relevant connectors. Reduce the number of suppliers and orders by 75%. Minimise machine downtimes. System guarantee – depending on the application.

## Sampling



- We provide support in the construction phase of your machine

[www.igus.eu/sampling](http://www.igus.eu/sampling)



**Basic for forklifts**  
e-chain® with fitted cables - strain relief in the system

**Standard**  
e-chain® with cables and relevant connectors

**Standard+**  
Harnessed e-chainsystems® with matching sheet metal parts

**Premium**  
Ready-to-install complete system with transport rack



## Engineering



- Customised products
- Many solutions from the "modular construction kit"

[www.igus.eu/engineering](http://www.igus.eu/engineering)



The type of harnessing most frequently used in forklifts

**Basic**  
e-chain® with cables and relevant connectors

[www.igus.eu/RCbasic](http://www.igus.eu/RCbasic)



[www.igus.eu/forklift](http://www.igus.eu/forklift)



## Tested ...



- Vertical mast with 60 mm guide roller
- + 720,484 strokes with chainflex® CF9



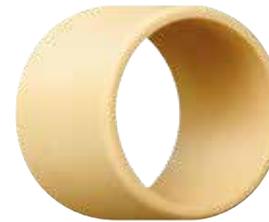
Extensive test database

## Tested ...



- Cable test in the climate chamber
- Tested in motion in energy chain® down to -40°C
- More than 250 tests conducted in parallel in 58 test facilities

## Tested ...



- Constant load test
- Tests of wear and coefficient of friction
- Test of functioning, service life, strength and failure scenarios



## Tested ...



- More than 3 billion test cycles per year
- Special test set-ups for specific industries
- Further information at [www.igus.eu/frontloadertest](http://www.igus.eu/frontloadertest)



From more than 15,000 tests per year was created, what is probably the world's largest test database. This database gives us the ability to always select the right product for your specific application. Individual tests for your industry are also possible.

[www.igus.eu/test](http://www.igus.eu/test)

igus.eu/forklift

# igus.eu/24

## Buy online – 24h!

Visit our industry web pages for more information, products, application examples and useful online tools. Quickly find and configure products and calculate service life – all online. With the help of our product finders, you can quickly find the right article and obtain an exact prediction of service life. All online tools also enable you to reduce process costs. igus® delivers from stock in 24-48 hours!



Always the right solution for forklifts.

igus® is certified in accordance with ISO 9001:2008 and ISO/TS 16949:2009 in the field of energy supply systems, cables and harnessing, as well as plastic bearings.

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