

# Forklifts

Solutions for forklifts, industrial vehicles and automated transport systems



• plastics for longer life®

igus®.eu...

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



## Reliable and 100% lubrication-free

Your technical innovator and cost reducer,

**Christian Strauch**

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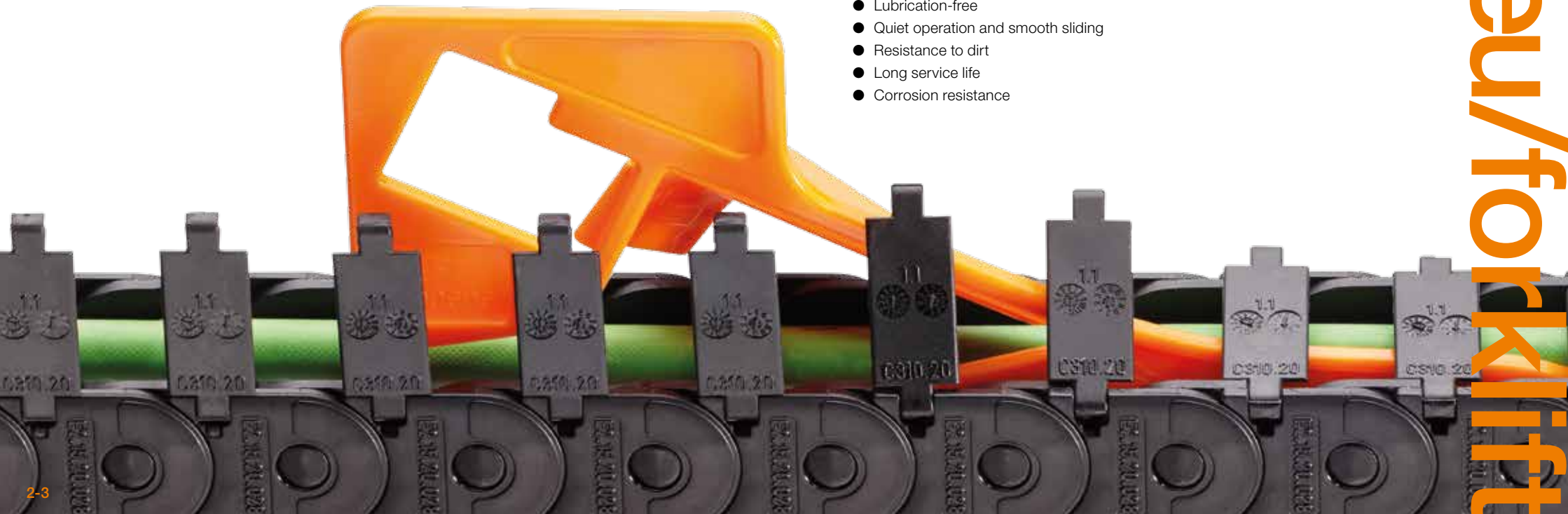
[www.igus.eu/forklift](http://www.igus.eu/forklift)

igus® solutions for forklifts, industrial vehicles and automated transport systems. Lubrication and maintenance-free, high service life and 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, used 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 successfully used. From igus®, you will receive a technically better solution with a longer service life or a product that is considerably more cost-effective than components you have previously used. 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 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
- Quiet operation and smooth sliding
- Resistance to dirt
- Long service life
- Corrosion resistance



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

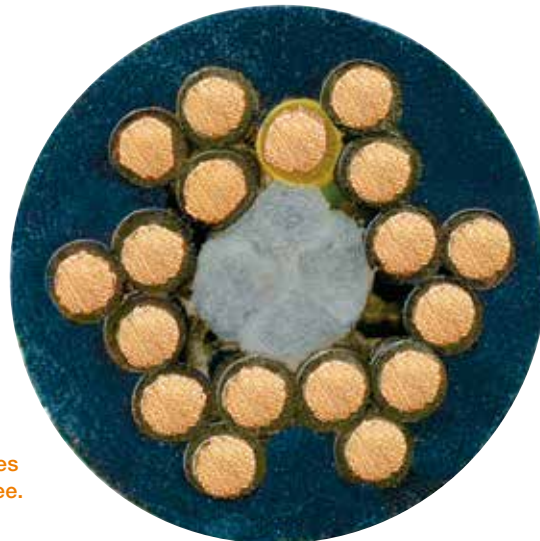
# Always the right solution for forklifts and industrial vehicles

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

Defects, repairs or downtimes of industrial vehicles for maintenance purposes are costly both in terms of replacement parts but also expensive downtime. Robust and reliable components are therefore required to avoid this. 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 heights in lifting gear.

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

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



chainflex® cables are braided in bundles and were developed especially for use in energy chains. All cables with 36 month guarantee.

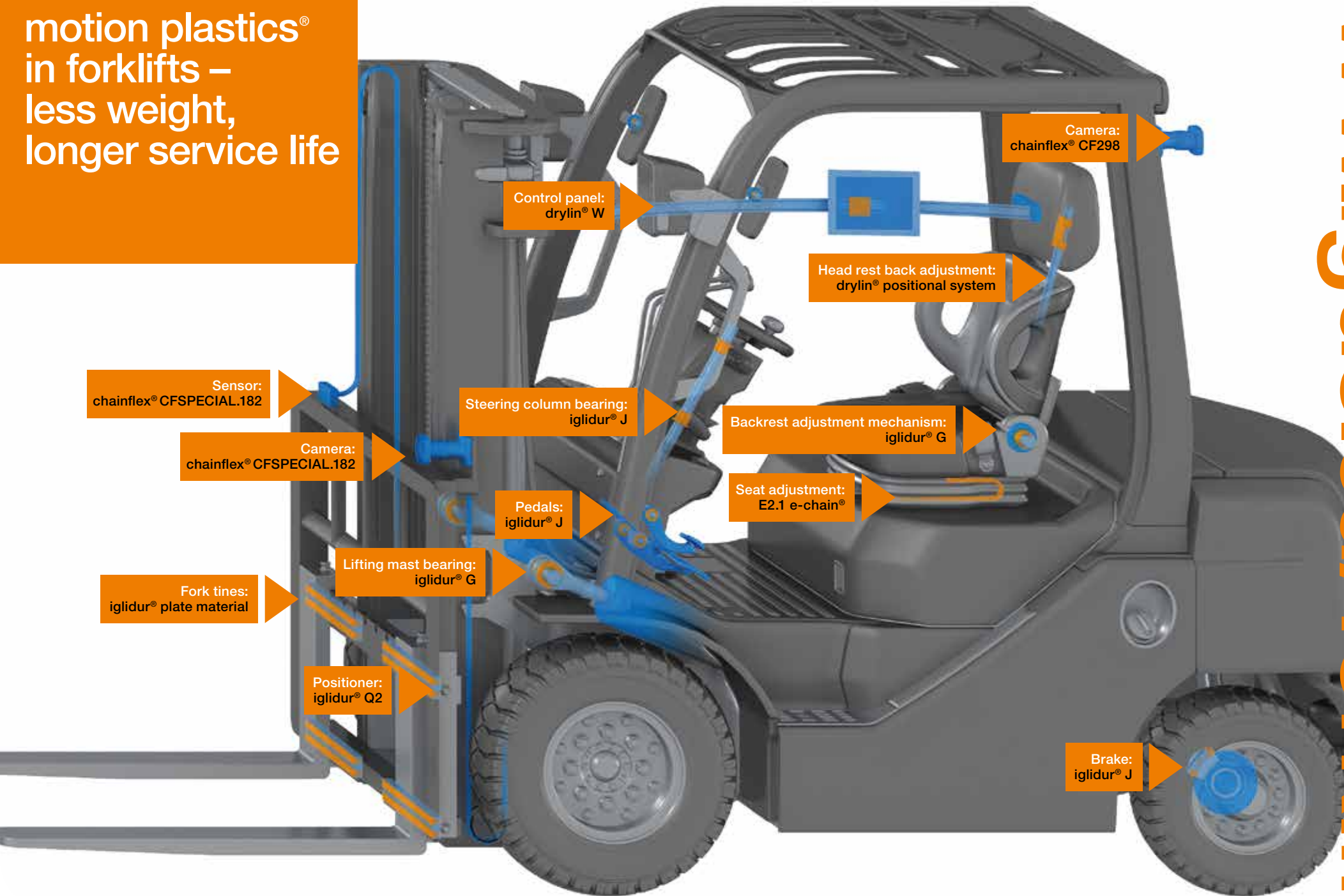


In the case of high-performance equipment for narrow aisle warehouses, the driver is also lifted up into the air.

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.

www.igus.eu/forklift

motion plastics®  
in forklifts –  
less weight,  
longer service life



Camera:  
chainflex® CF298

Control panel:  
drylin® W

Head rest back adjustment:  
drylin® positional system

Sensor:  
chainflex® CFSPECIAL.182

Steering column bearing:  
iglidur® J

Backrest adjustment mechanism:  
iglidur® G

Camera:  
chainflex® CFSPECIAL.182

Pedals:  
iglidur® J

Seat adjustment:  
E2.1 e-chain®

Fork tines:  
iglidur® plate material

Lifting mast bearing:  
iglidur® G

Positioner:  
iglidur® Q2

Brake:  
iglidur® J

www.igus.eu/forklift

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

### drylin® linear drives for Jungheinrich special forklifts

The creative designers in the Jungheinrich plant in Lüneburg Germany, face many different challenges. 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 trolleys in a large dairy facility and feed them into the washing system.

Right hand image: the drylin® W modular system offer the largest product range of igus® lubrication and maintenance-free drylin® linear guides.



## Energy supplied perfectly with chainflex® in roller guides

In order to supply energy and signals to the housing of an order picking machine via the moving lifting rack, the Still designers use an igus® chainflex® cable. This cable is not only suitable for applications with energy chains, but also an ideal solution when working over 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 pallets in the narrow aisles of a high bay warehouse, and then remove individual boxes. The pickers achieve heights of up to twelve metres.

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



# Linear solutions for automated transport systems: drylin® ZLW

High reliability and freedom from maintenance are of great importance in automated transport vehicles, because flexibility and operational efficiency are paramount for 24/7 operation. Maintenance-free igus® solutions reduce costs in procurement and operation and increase plant availability.

Reliable operation with minimal maintenance is a major advantage of FTS. With maintenance-free and lubrication-free drylin® ZLW toothed belt axes, this advantage is used here at Knapp's lifting platform.



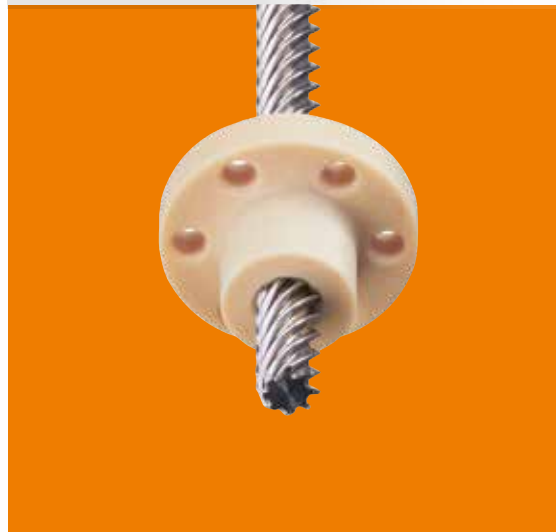
[www.igus.eu/forklift](http://www.igus.eu/forklift)



## iglidur® plain bearing in scissor lift: cost-effective and durable

- Maintenance-free
- Lubrication-free
- Cost-effective

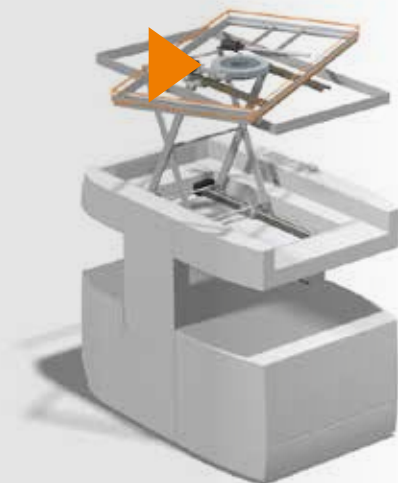
 [www.igus.eu/iglidur](http://www.igus.eu/iglidur)



## iglidur® plain bearings and drylin® lead screws in lifting unit: lightweight and quiet

- Maintenance-free
- Cost-effective
- Lightweight

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



## iglidur® PRT slewing ring bearing in rotary unit: torsional rigidity and low friction

- Maintenance-free
- Compact design
- Lightweight

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



## 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

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

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

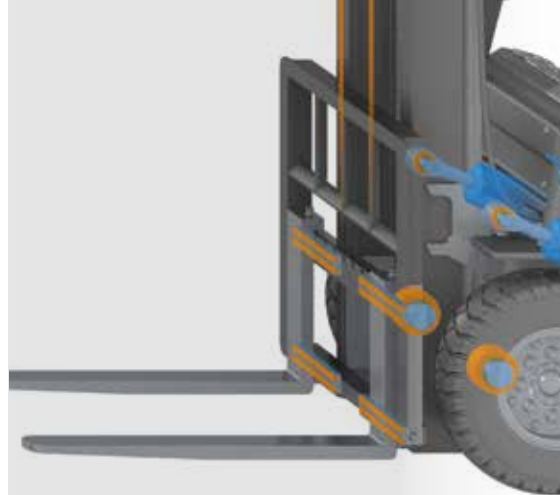
- drylin® W carriage on curved rail
- Variable profile directions
- Torque-resistant alternative to curved tube profiles

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

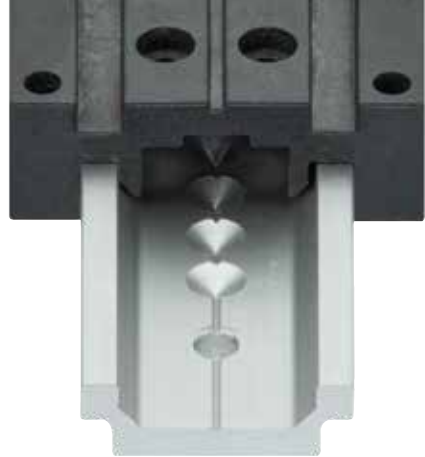
## iglidur® J in steering columns and pedals

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

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



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 options
- For exact re-positioning

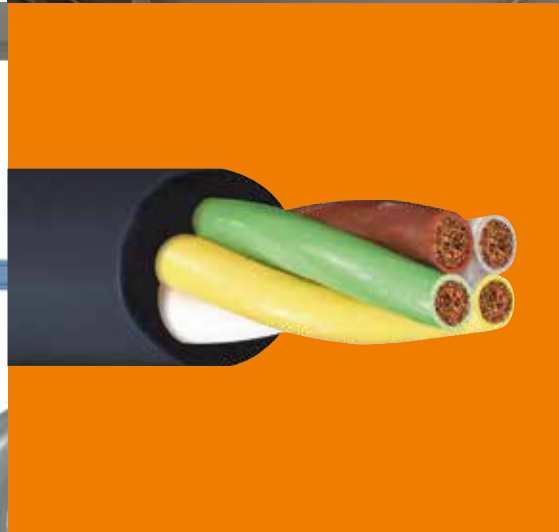
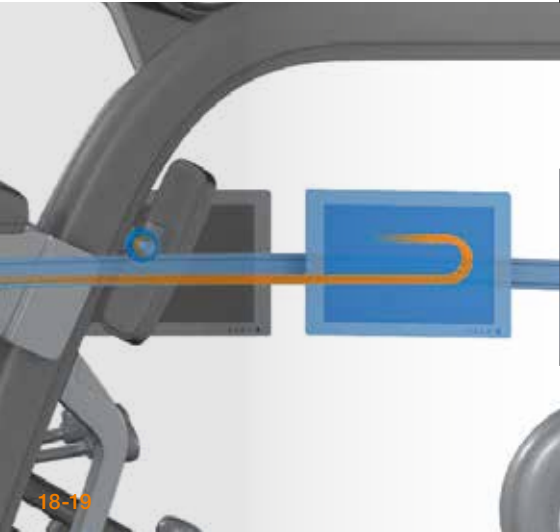
 [www.igus.eu/drylin](http://www.igus.eu/drylin)



## 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 the smallest installation spaces

- For extremely small radii and installation spaces either indoor or outdoor
- For hanging applications and high tensile strain
- 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® plain bearing worldwide
- High wear resistance
- Resistance to dust and dirt

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



## e-spool on scanners: compact and reliable cable guidance

- For telescopic/retractable applications, energy, data and other media in one system
- 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)



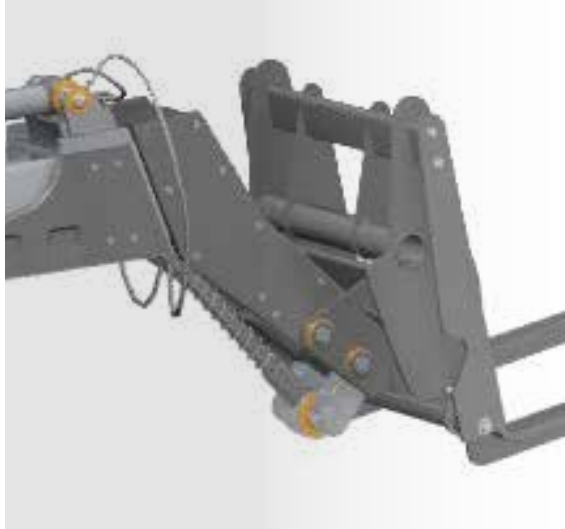
## e-chain® in special forklifts: safe and reliable cable guidance

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

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



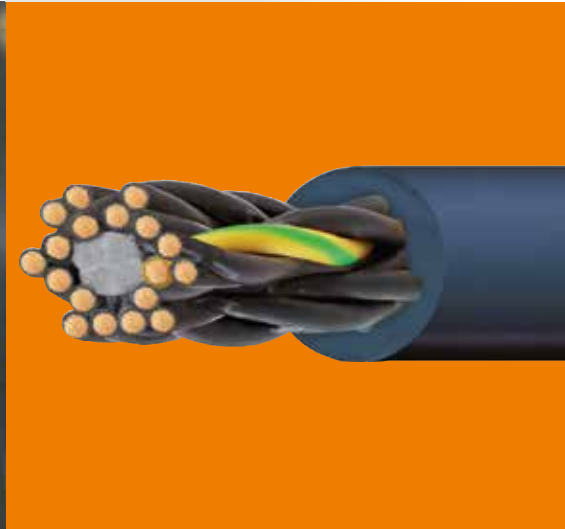
www.igus.eu/forklift



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

- Resistant to high frequency shocks and vibrations
- Extreme wear-resistant
- 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 tensile strain
- With 36 month guarantee\*, upon request

 [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 maintenance-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)

www.igus.eu/forklift

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

- Smooth running due to low coefficient of friction
- Reliable and maintenance-free
- Resistant to dirt



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



## drylin® SHT: optimum integration into forklift motion

- Body material made of stainless steel, aluminium, zinc or plastic
- Lubrication-free polymer bearings and nuts
- Three 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)

# Prototypes, very small batches, special purpose machinery



# 3D printing service - for unique parts made from high-performance plastics

**In two simple steps 3D-printed component - with instant price.**

We print custom components using lubrication-free, wear-resistant iglidur® high-performance plastics. Upload the drawing in the STEP (STP) format, check the 360° view and select the filament material. Upon order, it is printed and shipped – depending on the complexity – from 24 hours.

**Proven strength when compared to machined and injection-moulded parts.**

3D print materials from igus® are robust and composed of wear-resistant materials made of iglidur® high-performance plastics, which are especially suited for moving applications. They guarantee a long service life as well as a high wear resistance of custom-made parts.



Online 3D printing service: easy, fast, transparent



www.igus.eu/forklift

## Assembly



- Service for fast, error-free installation
  - Specialised assembly team
- [www.igus.eu/assembly](http://www.igus.eu/assembly)

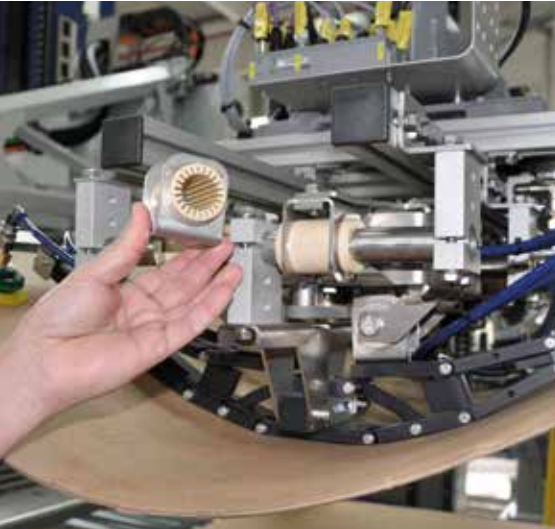


## Ready to install and industrially harnessed: [www.readychain.eu](http://www.readychain.eu)

Always the right harness for your application. Ready-to-fit readychain® e-chain system® configured and delivered in 3-8 days.

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

## Samples



- We can 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 plus**  
Harnesses e-chain systems® with associated sheet metal parts

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



## Engineering



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

28-29 [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 60mm guide roller
- 720,484 strokes with chainflex® CF9



Extensive  
test  
database

www.igus.eu/  
forklift

## 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 performed per year, we have 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)



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### motion plastics® - solutions for forklifts

#### igus® solutions for forklifts and industrial vehicles

Lubrication-free and maintenance-free, high service life, lifetime predictable online!

Dear Sir,

On this page 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 researchers in energy chains, and also classify us in the field of:

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. (See images)

**Your advantage:** You either get a technically better solution with longer service life or a substantially cheaper product than what you have today. Please see details [Click here to see more](#)

For example, you can replace metal plain and rolling bearings today and save cost and weight.

#### igus® products for forklifts and industrial vehicles

Your contact

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+ Your requirements?

- igus® contact  
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Always the right solution for forklifts. igus® is certified in accordance with ISO 9001:2015 and IATF 16949:2016 in the field of energy supply systems, cables and harnessing, as well as plastic bearings.

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© 2018 igus® GmbH  
Published by igus® GmbH, Germany  
MAT0074086.20 Issue 10/2018  
Subject to technical alterations.

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