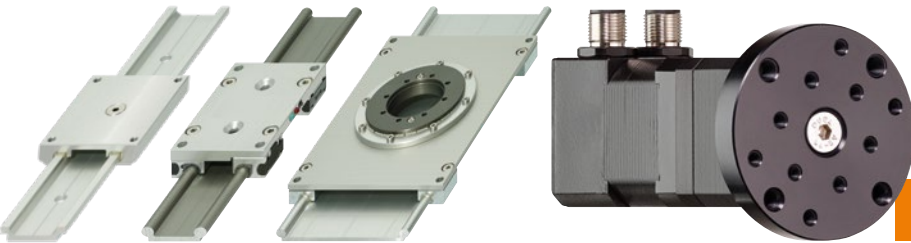


news...

dry-tech® bearings 2020 ...

igus.eu



Tech up, ...

Cost down.

It's our job.

2020...

motion plastics® ... for longer life ...

igus.eu



iglidur® plain bearings ...



Lubrication-free & reduce cost by up to 89.5%

iglidur® bar stock ...



Lubrication-free & reduce cost by up to 27.9%

igubal® spherical bearings ...



Lubrication-free & reduce cost by up to 78.1%

xiros® ball bearings ...



Lubrication-free & reduce cost by up to 82.2%

drylin® linear technology ...



Lubrication-free & reduce cost by up to 60.4%

dryspin® lead screw technology ...



Lubrication-free & reduce cost by up to 50.9%

Low Cost Automation ...



Automate & save with delta robots

from €3,970 Robot kit



Automate & save with robotlink®

from €3,538 5 DOF



Automate & save with drylin® linear robots

from €1,899 Room linear robot

Dear customers,

Technology up – cost down ... we will always give you one of the two. That is our goal and what we have offered you for many years.

The immense challenges of the upside-down year of 2020 have spurred us on to even greater efforts. You can find detailed information about each innovation and new product on the following pages: improve technology and reduce costs, details of these improvements, and information about sustainability.

As always, if you can't find something you need, write to us and share your idea. "It's our job."

All the best for an innovative year,



Frank Blase

Frank Blase
Managing Director

Take advantage of our digital and virtual offers #HM20 ... #whatwewouldhaveshown



Our own igus® innovations 2020 trade show stand ...
www.igus.eu/virtualexhibition
... and appointments with experts ...
www.igus.eu/expertmeeting



igus® Academy – free webinars with the motion plastics® experts

Our webinars cover many areas, from materials science to project planning to assembly assistance. We also cover plastic recycling, building your own 3D printer, and much more. Topic overview and registration at www.igus.eu/academy

igus® motion plastics® ... more than 100 news

It's our job.

Tech up, Cost down. It's our job.

Home of Home Office Pioneers







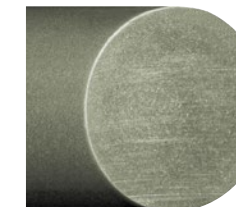
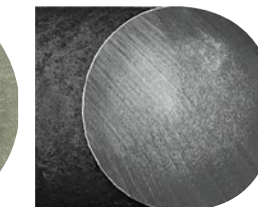
▶ **iglidur® polymer plain bearings**

iglidur® Q2E	iglidur® isense	iglidur® RW250	iglidur® E	...	iglidur® J3B	iglidur® K250 clip bearings	iglidur® A230 clip bearings	SG03 felt seal
								
iglidur® Q2E – optimised for very high loads	isense standard programme – no more unexpected bearing damage	iglidur® material for rail technology	iglidur® material for hard anodised aluminium shafts		iglidur® material for low wear in continuous operation	Flexible and temperature-resistant plain bearings for e-coating processes	Flexible plain bearings for sheet metal in the food industry	Clean despite dirt and dust due to felt seal SG03
▶ Page 10	▶ Page 12	▶ Page 14	▶ Page 16		▶ Page 18	▶ Page 20	▶ Page 22	▶ Page 24

▶ **iglidur® polymer plain bearings**

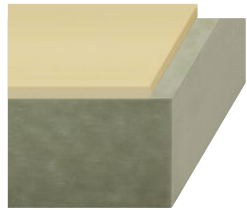
Knife-edge rollers	iglidur® rollers	iglidur® gears	iglidur® IC-04	iglidur® IC-05	▶ iglidur® PRT slewing rings		
							
iglidur® A250 – wear-resistant rolling for the food industry	Standard rollers product range in many different dimensions	Save weight and costs with iglidur® gears	Coating material for high chemical resistance	Coating material for the food sector	PRT-04 modular system addition: individual assembly options	PRT-04 modular system addition: compact inner drive teeth	PRT-04 modular system addition: conductive stainless steel
▶ Page 26	▶ Page 28	▶ Page 30	▶ Page 32	▶ Page 34	▶ Page 38	▶ Page 40	▶ Page 42

▶ **iglidur® PRT slewing rings**

iglidur® PRT-04 T	iglidur® PRT-04 R	iglidur® PRT-04 TS	iglidur® isense PRT	iglidur® PRT-04 DP	Bar stock Tribo-Cut	Round bars/plates E7	Round bars HLW
							
PRT-04 modular system addition: easy positioning with slot nut profile	PRT-04 modular system addition: precise latching with defined latching points	PRT-04 modular system addition: continuous pivoting range with angle stop	PRT-04 modular system addition: predictive sensors with switching sensor	PRT-04 modular system addition: direct connection to motor	iglidur® Tribo-Cut - your CNC machining service for individually machined parts	More choice - iglidur® E7, new as bar stock round bar for pivoting movements	More choice - iglidur® HLW for high loads and temperatures
▶ Page 44	▶ Page 46	▶ Page 48	▶ Page 50	▶ Page 52	▶ Page 56	▶ Page 58	▶ Page 60

▶ **iglidur® bar stock**

Plate strips



Bar stock plate strips for more design freedom

▶ Page 62

▶ **iglidur® 3D printing**

Tribo-tape sheets



Low-profile tribo-tape as sheet material

▶ Page 64

Worldwide service



iglidur® 3D printing service delivers even quicker

▶ Page 68

Multi-material components



Two different materials can be combined, whether in 3D printing or injection moulding

▶ Page 70

...

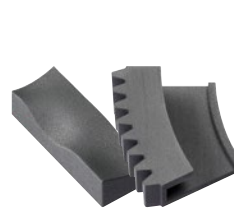
Online configurator



Configure lead screw nuts and sliding plates in 60 seconds online, ready for shipment within 3 days

▶ Page 72

iglidur® I8-ESD



SLS material iglidur® I8-ESD without electrostatic charges due to ESD properties

▶ Page 74

iglidur® I190



The new all-rounder tribo-filament - higher strength and increased temperature stability

▶ Page 76

iglidur® I150



Fewer spool changes with the 8kg spool made of iglidur® I150 tribo-filament

▶ Page 78

▶ **iglidur® 3D printing** ▶ **igubal® spherical bearings**

iglidur® A350



Tribo-filament for the food industry

▶ Page 80

igubal® KARM



Metallic housing with maintenance-free inner ring - igubal® KARM-12-MI-J-EK

▶ Page 84

igubal® GPZM



Coupling joint made of flexible material for easy assembly

▶ Page 86

igubal® WGRM



New angled ball and socket joint easy to assemble and disassemble

▶ Page 88

igubal® JPM-40



Reduce cost with spherical cap made of iglidur® J for control arms

▶ Page 90

igubal® ESQM



igubal® ESQM-100 - solar pillow block bearing for square tubes

▶ Page 92

igubal® J4EM-SP



Low-cost interchangeable spherical ball made from iglidur® J4

▶ Page 94

igubal® cast iron housing



Plastic spherical balls, resistant to dust and dirt fitted in solid stainless steel housing

▶ Page 96

▶ **xiros® polymer ball bearings**

Guide roller



Easy labelling with black anodised guide rollers

▶ Page 100

Polymer ball transfer unit



Ideal for the lubrication-free and electrostatically dissipative transport of delicate goods

▶ Page 102

Self-aligning ball bearing



xiros® self-aligning ball bearing according to DIN 630 compensates for alignment errors

▶ Page 104

▶ **drylin® linear**

drylin® CA rails

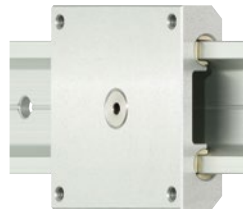


Corrosion-resistant drylin® W-clear anodised rails with round geometry for the modular linear system

▶ Page 108

technology ...

drylin® position carriage



Intuitive positioning with the drylin® W linear carriage with integrated spring latching system

▶ Page 110

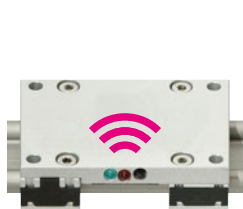
drylin® WJRM



Reduced coefficient of friction with optimised roller orientation and integrated ball bearings

▶ Page 112

drylin® isense / LED



Predictive maintenance: drylin® linear carriage with wear display via LED or with wireless transmission

▶ Page 114

drylin® PRT carriage




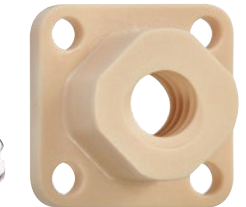


drylin® linear system with linear carriage and integrated PRT slewing ring from igus®

▶ Page 116

► **drylin® linear technology**

drylin® NW	drylin® NWV	drylin® NTP	drylin® RJUMP
			
Low-profile, light and durable drylin® N linear carriage made of solid plastic	drylin® N linear carriage with defined pretension	drylin® NTP – complete telescopic guide made of solid plastic	Linear housings made of robust lightweight igus® polymers, cost-effective injection-moulding
► Page 118	► Page 120	► Page 122	► Page 124


► **drylin® lead screw technology**

dryspin® lead screws	dryspin® lead screw nuts	dryspin® JGRM	dryspin® 10x3
			
4 new thread sizes with patented dryspin® high helix thread geometry	4 new dryspin® pitches for plastic lead screw nuts	dryspin® JGRM in light design optimised for injection moulding - tough, with the same connections and cost-effective	Quieter with less vibrations - new dryspin® thread size as alternative to trapezoidal thread 10x3
► Page 128	► Page 130	► Page 132	► Page 134

► **drylin® drive technology**

drylin® ZLW-ES	drylin® ZLWT	drylin® GEA	drylin® INI
			
Flat stainless steel toothed belt axis for drylin® E stepper motors or direct-current motors	Toothed belt axis with double toothed belt based on linear guide system drylin® W with separate control	New gearboxes for torque up to 44Nm continuously	Complete package for a variety of automation tasks without programming
► Page 138	► Page 140	► Page 142	► Page 144

► **Low Cost Automation**

SHT configurator	robotlink® RL-DP	ReBeL®	robotlink® RS-17
			
Configure complete system with motor and control system online	Your colour, your logo, your design - your Low Cost Automation	For applications involving human-machine collaboration	drygear® - new, efficient generation of strain wave gears in compact design
► Page 146	► Page 150	► Page 152	► Page 154

► **Low Cost Automation**

igus® robot control	7th axis	Apiro® idea notes	RBTX - components
			
First robotics control software by igus®	7th axis as linear adjustment offers more flexibility for robots	Apiro® gearbox system in modular design	Order complete assemblies online with e-chain systems® and chainflex® cables
► Page 156	► Page 158	► Page 160	► Page 162

► **Sustainability at igus®**

RBTX - Delta-Mini	Measures ... Recycling ... plastic2oil
	
New education area on the robotics platform especially for training and research facilities	igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil
► Page 164	► Page 166

new



16 highlight 2020

igidur® E - ideal for hard anodised aluminium shafts



10

igidur® Q2E – optimised multi-component design for very high loads



12

isense standard - integrated service life monitoring



14

igidur® materials for rail technology, aluminium shafts and low wear in continuous operation



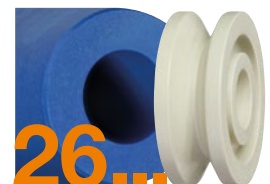
20

Clip bearings for KTL/e-coating methods and the food industry



24

Clean despite dirt and dust thanks to felt seal SG03



26

Knife-edge rollers and standard rollers product range in many different dimensions



30

Save weight and costs with iglidur® gears



32

Coating materials for the food sector and high chemical resistance



36

PRT-04 modular kit addition: stainless steel, latching, toothing and a lot more

Tech up, Cost down. It's our job.

Lubrication-free made easy ...

new... iglidur

... Polymer plain bearings



↓
130MPa

... optimised for high loads ...
... iglidur® Q2E offers a completely new multi-component design and is able to carry the most extreme loads ...



... optimised for high loads ...
... iglidur® Q2E offers a completely new multi-component design and is able to carry the most extreme loads ...

▲ Tech up

- Long service life in high load pivoting applications beyond 130MPa
- Optimised, efficient design for even better absorption of edge loads
- Dimensionally stable

▼ Cost down

- One-piece design
- Standard range from stock and available with no minimum order quantity
- Maintenance-free

■ Proof

- Proven in customer applications in agricultural and construction machinery under high loads and difficult environmental conditions such as moisture, dust and dirt

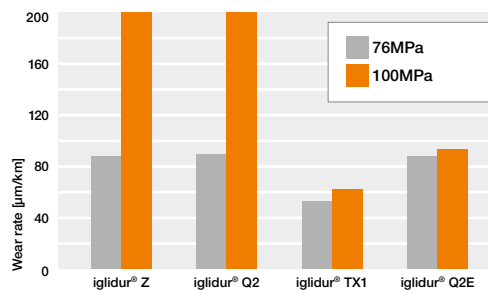


● Sustainability

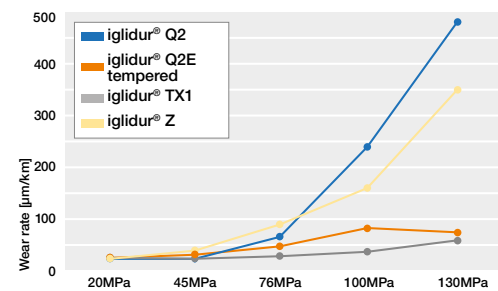
- Improved wear properties
- Environmentally-friendly due to the absence of additional lubricants
- iglus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:

www.igus.eu/plastic2oil

Pivoting wear – Torque 40Nm
Shaft Cf53, v = 0.01m/s



Pivoting comparison
Shaft Cf53, v = 0.01m/s



Pivoting tests in dirt environment with PTL8710 solution versus Cf53
P = 10MPa, v = 0.01m/s, 200,000 cycles

Dimensions [mm]

Part No.	d1	d1 tolerance*	d2	b1
Q2ESM-2025-20	20	+0.040 +0.164	25	20
Q2ESM-2530-30	25	+0.040 +0.164	30	30
Q2ESM-3035-30	30	+0.050 +0.190	35	30
Q2ESM-3540-40	35	+0.050 +0.190	40	40
Q2ESM-4045-40	40	+0.050 +0.190	45	40
Q2ESM-4550-50	45	+0.050 +0.190	50	50
Q2ESM-5055-50	50	+0.060 +0.220	55	50
Q2ESM-6065-60	60	+0.060 +0.220	65	60

Available from stock

Dimensions [inch]

Part No.	d1	d2	b1
Q2ESI-1216-16	3/4	1	1
Q2ESI-1620-16	1	1 9/32	1
Q2ESI-2024-16	1 1/4	1 17/32	1
Q2ESI-2428-16	1 1/2	1 3/4	1
Q2ESI-3236-16	2	2 1/4	1
Q2ESI-4044-16	2 1/2	2 3/4	1

New

iglidur® G

iglidur® P210

iglidur® J

iglidur® A180

iglidur® Q2E

... avoid bearing damage ...

... new plain bearings standard product range for predictive maintenance ...

Tech up

- First wear-detecting plain bearing now as standard range
- After reaching a defined level of wear, the system informs the users to enable planned maintenance without risk of unplanned downtime.

Proof

- Tested in our own test rigs inside and outside



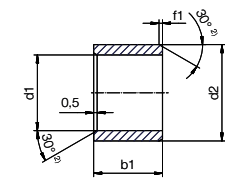
Cost down

- Standard range
- No unplanned machine downtime
- Early information about wear of bearings prevents the shaft from damage.

Sustainability

- Never change the bearing unless necessary
- No replacement of the shaft due to damage from a worn plain bearing
- iglus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

General properties	Unit	iglidur®				
		G	P210	J	A180	Q2E
Density	g/cm³	1.46	1.40	1.49	1.46	1.46 – 1.69
Max. moisture absorption at +23°C and 50% r. h.	% weight	0.7	0.3	0.3	0.2	1.5
Max. total moisture absorption	% weight	4.0	0.5	1.3	1.3	5.0
Mechanical properties						
Flexural modulus	MPa	7,800	2,500	2,400	2,300	n.s.
Flexural strength	MPa	210	70	73	88	235
Max. recommended surface pressure	MPa	80	50	35	28	135
Shore D hardness		81	75	74	76	80
Thermal properties						
Max. long-term application temperature	°C	+130	+100	+90	+90	+100
Max. short-term application temperature	°C	+220	+160	+120	+110	+140
Min. application temperature	°C	-40	-40	-50	-50	-30
Electrical properties						
Specific contact resistance	Ωcm	10 ¹³	10 ¹²	10 ¹³	10 ¹²	> 10 ¹²
Surface resistance	Ω	10 ¹¹	10 ¹¹	10 ¹²	10 ¹¹	> 10 ¹²



- = iglidur® material
- iglidur® G
- iglidur® P210
- iglidur® J
- iglidur® A180
- iglidur® Q2E

Dimensions [mm]

Part No.	d1	d2	b1 h13	Wear limit
□ SM-2025-20-IG.W-020	20	25	20	0.2
□ SM-3035-30-IG.W-030	25	30	30	0.3
□ SM-4045-40-IG.W-040	30	35	30	0.4

Available upon request



New



... extremely wear-resistant ... with DIN EN 45545, the new material iglidur® RW250 meets



resistant the strict fire protection requirements of railway technology

Tech up

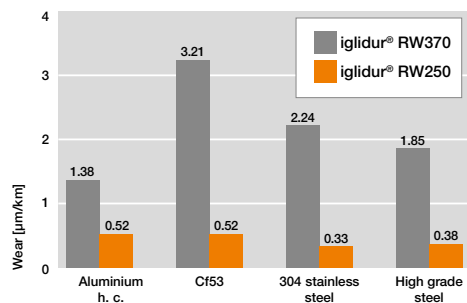
- Suitable according to DIN EN 45545
- Flame-retardant
- Wear-resistant

Cost down

- Maintenance-free
- Higher running performance

Proof

- Lasts up to 3 times longer than iglidur® RW370
- Wear, rotating, $t = 23^\circ\text{C}$, $p = 1\text{MPa}$, $v = 0.3\text{m/s}$



Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:

www.igus.eu/plastic2oil

General properties

Density	1.15g/cm ³
Colour	black
Max. moisture absorption at +23°C and 50% r. h.	n.s.
Max. total moisture absorption	n.s.

Electrical properties

Specific contact resistance	> 10 ¹² Ωcm
Surface resistance	> 10 ¹² Ω

Mechanical properties

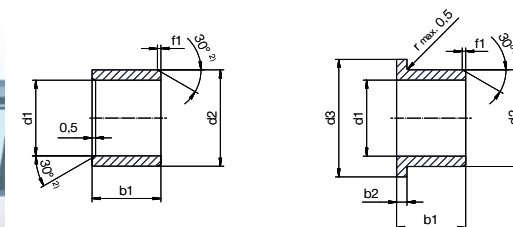
Shore D hardness	n.s.
Max. recommended surface pressure	n.s.

Thermal properties

Max. long-term application temperature	+90°C
Max. short-term application temperature	+180°C
Min. application temperature	-40°C

Chamfer in relation to d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø >30
f1 [mm]:	0.3	0.5	0.8	1.2



New



... extremely wear-resistant ...

... on hard anodised aluminium shafts

... iglidur® E ...



Tech up

- Very low coefficient of friction
- Wear-resistant material for continuous operation
- Vibration-dampening

Cost down

- Cost-effective
- Maintenance-free
- Higher running performance than iglidur® J

Proof

- Lasts up to three times longer in rotating and linear applications than iglidur® J
- **Test:** linear movement, load 1MPa, speed 0.1m/s, shaft: aluminium hc.
Result: iglidur® J 0.84µm/km, iglidur® E 0.17µm/km
- **Test:** rotating: load 1MPa, speed 0.3m/s, shaft aluminium hc.
Result: iglidur® J 0.3µm/km, iglidur® E 0.1µm/km

Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil

General properties

Density	1.50g/cm ³
Colour	beige
Max. moisture absorption at +23°C and 50% r. h.	0.2% weight
Max. total moisture absorption	1.7% weight

Electrical properties

Specific contact resistance	> 10 ¹² Ωcm
Surface resistance	> 10 ¹² Ω

Chamfer in relation to d1

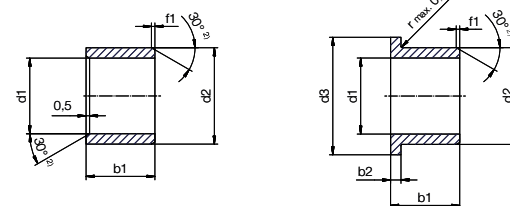
d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø >30
f1 [mm]:	0.3	0.5	0.8	1.2

Mechanical properties

Shore D hardness	78
Flexural modulus	2,975MPa

Thermal properties

Max. long-term application temperature	+90°C
Max. short-term application temperature	+120°C
Min. application temperature	-50°C



Dimensions [mm] – cylindrical bearings

Part No.	d1	d1 tolerance*	d2	b1	h13
ESM-0608-06	6	+0.020 +0.068	8	6	
ESM-0810-10	8	+0.025 +0.083	10	10	
ESM-1012-10	10	+0.025 +0.083	12	10	
ESM-1214-12	12	+0.032 +0.102	14	12	
ESM-1618-15	16	+0.032 +0.102	18	15	
ESM-2023-20	20	+0.040 +0.124	23	20	

Dimensions [mm] – flanged bearings

Part No.	d1	d1 tolerance*	d2	d3	b1	b2	h13
EFM-0608-06	6	+0.020 +0.068	8	12	8.0	1.0	
EFM-0810-10	8	+0.025 +0.083	10	15	9.5	1.0	
EFM-1012-10	10	+0.025 +0.083	12	18	9.0	1.0	
EFM-1214-12	12	+0.032 +0.102	14	20	12.0	1.0	
EFM-1618-17	16	+0.032 +0.102	18	24	17.0	1.0	
EFM-2023-21	20	+0.040 +0.124	23	30	21.5	1.5	

Available from stock

* After press-fit of the bearing in a housing with nominal dimension, the inner diameter of the bearing adjusts itself to a E10 tolerance.



... proven ... low wear ...
 ... the proven long life material iglidur® J3 is also available

ear ...
 in black ... iglidur® J3B ...

Tech up

- Low coefficient of friction
- Visually fits ideally into your design and offers the same specifications as iglidur® J3

Cost down

- Maintenance-free
- High running performance due to low coefficient of friction
- Available from stock and with no minimum order quantity

Proof

- Proven in applications already implemented by iglidur® J3
- Example: iglidur® J3 in bicycle pedals
www.igus.eu/J3-application

Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil

General properties	
Density	1.42g/cm ³
Colour	black
Max. moisture absorption at +23°C and 50% r. h.	0.3% weight
Max. total moisture absorption	1.3% weight
Electrical properties	
Specific contact resistance	> 10 ¹² Ωcm
Surface resistance	> 10 ¹² Ω

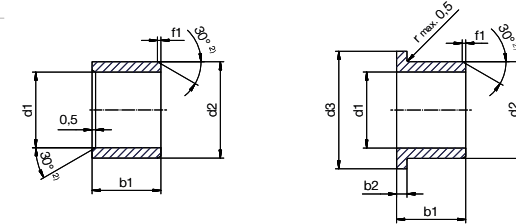
Chamfer in relation to d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø >30
f1 [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm] – cylindrical bearings

Part No.	d1	d1 tolerance* h13	d2	b1
J3BSM-0608-06	6	+0.020 +0.068	8	6
J3BSM-0810-10	8	+0.025 +0.083	10	10
J3BSM-1012-10	10	+0.025 +0.083	12	10
J3BSM-1214-12	12	+0.032 +0.102	14	12
J3BSM-1618-15	16	+0.032 +0.102	18	15
J3BSM-2023-20	20	+0.040 +0.124	23	20

Mechanical properties	
Shore D hardness	76
Max. recommended surface pressure	44MPa
Thermal properties	
Max. long-term application temperature	+90°C
Max. short-term application temperature	+110°C
Min. application temperature	-50°C



Dimensions [mm] – flanged bearings

Part No.	d1	d1 tolerance* h13	d2	d3	b1	b2
J3BFM-0608-06	6	+0.020 +0.068	8	12	8.0	1.0
J3BFM-0810-10	8	+0.025 +0.083	10	15	9.5	1.0
J3BFM-1012-10	10	+0.025 +0.083	12	18	9.0	1.0
J3BFM-1214-12	12	+0.032 +0.102	14	20	12.0	1.0
J3BFM-1618-17	16	+0.032 +0.102	18	24	17.0	1.0
J3BFM-2023-21	20	+0.040 +0.124	23	30	21.5	1.5

* After press-fit of the bearing in a housing with nominal dimension, the inner diameter of the bearing adjusts itself to a E10 tolerance.

Available from stock

New



...for sheet metal, save costs and weight

...flexible and temperature-resistant plain bearings for electroplating processes ...

Tech up

- High temperature resistance
- Cathodic dip/E-coating
- Dimensionally stable

Cost down

- Time-saving, fast assembly
- Maintenance-free

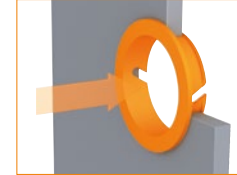
Proof

- Clip bearings are already used millions of times, for example, in the automotive industry
www.igus.eu/applications-automotive



Sustainability

- Environmentally friendly due to the absence of lubricants
- Good coefficient of wear
- Long service life
- Lighter than metallic solutions
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil



Simply press in plain bearings axially. Check the correct position of the plain bearing. Done! The bearing is now ready for use.

General properties

Density	1.19g/cm ³
Colour	black
Max. moisture absorption at +23°C and 50% r. h.	0.3% weight
Max. total moisture absorption	3.6% weight

Electrical properties

Specific contact resistance	> 10 ¹² Ωcm
Surface resistance	> 10 ¹² Ω

Mechanical properties

Flexural modulus	2,975MPa
Flexural strength	79MPa
Shore D hardness	70
Max. recommended surface pressure	35MPa

Thermal properties

Max. long-term application temperature	+90°C
Max. short-term application temperature	+110°C
Min. application temperature	-50°C

Dimensions [mm]

Part No.	d1 D11	d2	d3	d4	s	b1
K250CM-05-02	5	6.2	6.8	8	0.6	3.2
K250CM-06-03	6	7.2	7.8	11	0.6	4.2
K250CM-08-03	8	9.6	10.4	13	0.8	4.6
K250CM-10-03	10	11.6	12.4	15	0.8	4.6
K250CM-12-03	12	13.6	14.4	17	0.8	4.6

Available from stock

New



... FDA and EU10/ ... flexible plain bearings for sheet metal in the food ind

▲ Tech up

- FDA and EU10/2011-compliant
- Visually detectable
- Low moisture absorption
- Suitable for use in the food industry and medical technology

■ Proof

- First clip material with FDA and EU10/2011 compliance

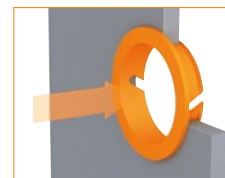
▼ Cost down

- Fast assembly
- Maintenance-free

● Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil

2011-compliant ... ustry ... iglidur® A230 ...



Simply press in plain bearings axially. Check the correct position of the plain bearing. Done! The bearing is now ready for use.

General properties

Density	1.20g/cm ³
Colour	blue
Max. moisture absorption at +23°C and 50% r. h.	0.3% weight
Max. total moisture absorption	2.5% weight

Electrical properties

Specific contact resistance	> 10 ¹² Ωcm
Surface resistance	> 10 ¹² Ω

Mechanical properties

Flexural modulus	1,530MPa
Flexural strength	53MPa
Shore D hardness	73
Max. recommended surface pressure	18MPa

Thermal properties

Max. long-term application temperature	+110°C
Max. short-term application temperature	+130°C
Min. application temperature	-30°C

Dimensions [mm]

Part No.	d1 D11	d2	d3	d4	s	b1
A230CM-05-02	5	6.2	6.8	8	0.6	3.2
A230CM-06-03	6	7.2	7.8	11	0.6	4.2
A230CM-08-03	8	9.6	10.4	13	0.8	4.6
A230CM-10-03	10	11.6	12.4	15	0.8	4.6
A230CM-12-03	12	13.6	14.4	17	0.8	4.6

Available from stock



... prevent ingress of dirt ...

... the felt seal iglidur® SG03 prevents the ingress of dirt and



Tech up

- Clean bearings even with dirt and dust, thanks to felt seal
- Ready-to-install solution

Cost down

- Cost-effective
- Maintenance-free
- High running performance

Proof

- The natural felt seals perfectly against dust and dirt
- In laboratory tests, a service life up to 50 times higher was achieved.




Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



For thrust washers (part number: [GTM-2036-025-SG03-050](#)) and flanged bearing (part number: [GFM-2026-20-SG03-050](#))

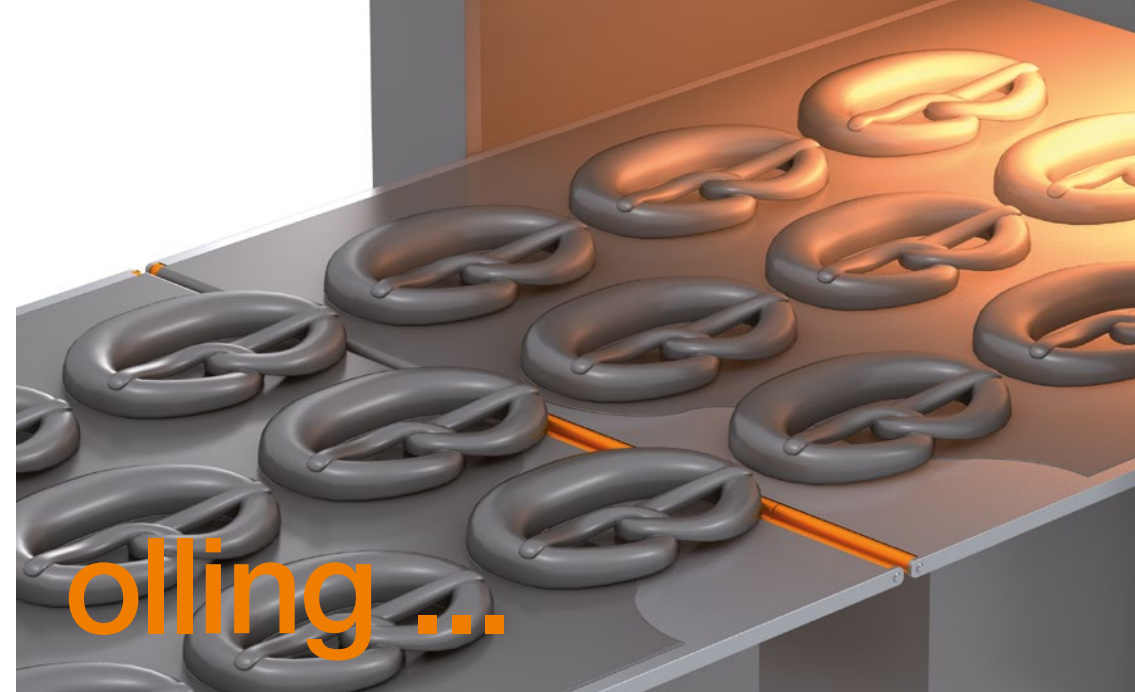
 Dimensions and prices upon request

New



... wear-resistant r

... iglidur® A250 knife edge rollers ...



olling ...

Tech up

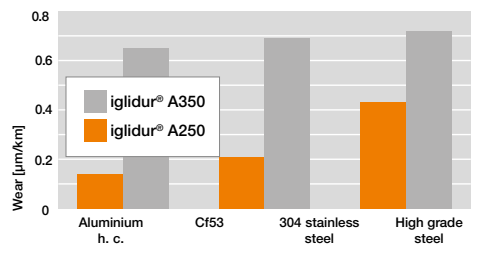
- Wear-resistant
- FDA and EU10/2011-compliant
- Tight deflection radii
- Low drive power required
- Lubrication-free deflection of belts

Cost down

- Maintenance-free
- Higher running performance

Proof

- This type of roller has been successfully used by many customers for years
- Tested many times at iglus® on specially developed test rigs, here: wear, rolling, V2A



Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- iglus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Our standard range for knife edge rollers

Availability and dimensions [mm]

Part No.	d1 ±0.1	d2	b1 -0.3	P210	A180	A350	H1
□ RLM-0309-50	3.1	9.0	50.0	●	●	●	●
□ RLM-0409-50	4.1	9.0	50.0	●	●	-	●
□ RLM-0511-70	5.1	11.0	70.0	●	●	-	●
□ RLM-0514-70	5.1	14.0	70.0	●	●	-	-
□ RLM-0612-70	6.1	12.0	70.0	●	●	●	●
□ RLM-0614-70	6.1	14.0	70.0	●	●	●	●
□ RLM-0812-70	8.1	12.0	70.0	●	●	-	●
□ RLM-0814-70	8.1	14.0	70.0	●	●	-	●
□ RLM-0816-77	8.1	16.0	77.0	●	-	-	-
□ RLM-0818-70	8.1	18.0	70.0	●	●	●	-
□ RLM-1020-70	10.1	20.0	70.0	●	●	-	-

□ = iglidur® material; iglidur® A250 upon request

Available upon request

New



... **saves space, costs** ... maintenance-free guide rollers made of iglidur® materials ...

saves costs and weight ...

Tech up

- Lubrication-free rolling without ball bearings
- Wear-resistant
- Available iglidur® materials: iglidur® P210, iglidur® H1, iglidur® A180, iglidur® A350

Cost down

- Less costs for maintenance, no costs for lubricants
- Light
- Cost-effective injection moulding

Proof

- The individually manufactured type has been successfully used by many customers for years (e.g. Krones AG, Kohler Maschinenbau GmbH)
- Tested many times at igus® on specially developed test rigs.



Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:

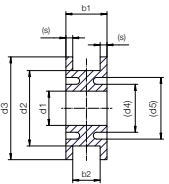
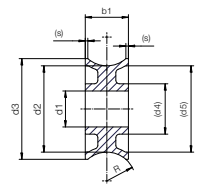
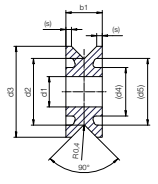
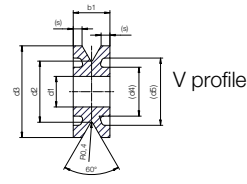
www.igus.eu/plastic2oil

Profile	d1	d2	d3	b1	° - angle
V	3	4	10	6	60
V	5	6	12	8	60
V	6	10	16	10	60
V	8	12	20	10	60
V	10	16	24	12	60
V	10	20	30	12	60
V	12	30	40	14	60
V	16	36	50	14	60
V	20	46	60	14	60
L	3	6	10	6	90
L	5	6	12	8	90
L	6	10	16	10	90
L	8	12	20	10	90
L	10	16	24	12	90
L	10	20	30	12	90
L	12	30	40	14	90
L	16	36	50	14	90
L	20	46	60	14	90

Profile	d1	d2	d3	b1	Radius
U	6	13	16	8	5
U	8	20	24	10	6
U	10	24	28	12	8
U	10	26	30	14	10
U	12	40	44	16	12.5

Profile	d1	d2	d3	b1	b2
F	3	7	10	6	4
F	5	11	12	8	5
F	6	12	16	10	7
F	8	16	20	10	7
F	10	18	24	12	9
F	10	20	30	12	8

Order example: **H1RLVM-1024-12**
 Material iglidur® H1, type roller, profile type V, metric, inner diameter 10mm, diameter 24mm and total width 12mm



Available from stock



light, lubrication and maintenance-free

... save weight and costs with iglidur® gears ...



Tech up

- Very low coefficient of friction
- Wear-resistant material for continuous operation
- Vibration-dampening

Cost down

- Cost-effective due to injection moulding
- Maintenance-free through the use of iglidur® materials
- Long service life

Proof

- iglidur® gears are already being used successfully in our gearboxes



Sustainability

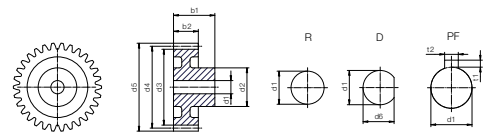
- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

General properties		xirodur® B180
Density		1.41g/cm³
Colour		white
Max. moisture absorption at +23°C and 50% r. h.		0.2% weight
Max. total moisture absorption		0.7% weight
Mechanical properties		
Flexural modulus		2,500MPa
Flexural strength		68MPa
Max. recommended surface pressure		23MPa
Shore D hardness		77

Electrical properties		
Specific contact resistance		> 10 ¹⁴ Ωcm
Surface resistance		> 10 ¹⁴ Ω
Thermal properties		
Max. long-term application temperature		+80°C
Max. short-term application temperature		+110°C
Min. application temperature		-40°C

Dimensions [mm]

Part No.	Module	Number of teeth	Helix angle [°]	Hub design	d1	d5	d6	b1	b2
B180GM-ST-1-20-00-048-R				Round	4.8	22	-	15	9
B180GM-ST-1-20-00-050-D	1	20	0	D cut	5	22	4.5	15	9
B180GM-ST-1-20-00-060-PF				Feather key	6	22	-	15	9
B180GM-ST-1-30-00-048-R				Round	4.8	32	-	15	9
B180GM-ST-1-30-00-050-D	1	30	0	D cut	5	32	4.5	15	9
B180GM-ST-1-30-00-060-PF				Feather key	6	32	-	15	9
B180GM-ST-1-40-00-048-R				Round	4.8	42	-	15	9
B180GM-ST-1-40-00-050-D	1	40	0	D cut	5	42	4.5	15	9
B180GM-ST-1-40-00-060-PF				Feather key	6	42	-	15	9



Example order: [B180GM-ST-1-20-00-048-R](#); B180 material, G gear, M metric, -ST spur gear, -1 module, -20 number of teeth, -00 helix angle, -048 d1, -R hub design

Available upon request



← Coating



+



=



... reduce coefficient of friction ... material with extreme high temperature and chemical

... resistance ... iglidur® IC-04 ...

Tech up

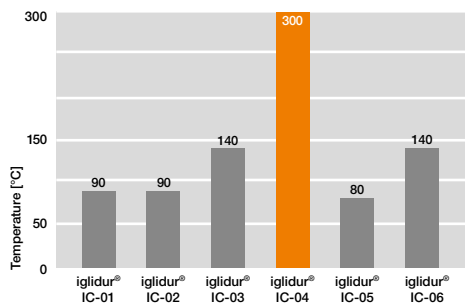
- For high temperatures up to +250 °C
- Excellent chemical resistance
- Reduces coefficient of friction

Cost down

- Simple coating of metallic surfaces
- Maintenance-free

Proof

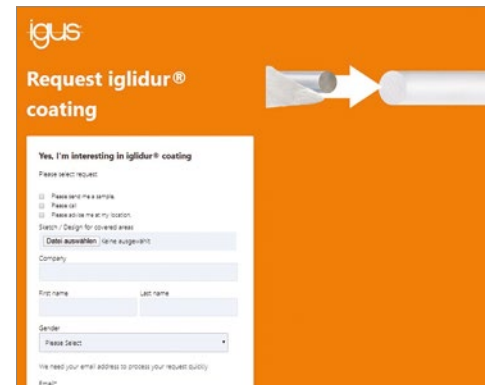
- Comparison of temperature resistance



Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:

www.igus.eu/plastic2oil



www.igus.eu/coating-requests

General properties

Colour black

Mechanical properties

Crosscut GT 0

Thermal properties

Max. long-term application temperature +250°C

Max. short-term application temperature +300°C

Min. application temperature -100°C

Electrical properties

Specific contact resistance > 10¹² Ωcm

Surface resistance > 10¹² Ω

igidur®	IC-01	IC-02	IC-03	IC-04	IC-05	IC-06
Colour	white	black	yellow	black	blue	cream
Max. application temperature [°C]	90	90	140	300	80	140

Available upon request

New



food ...
for coating ... iglidur® IC-05 ...



Tech up

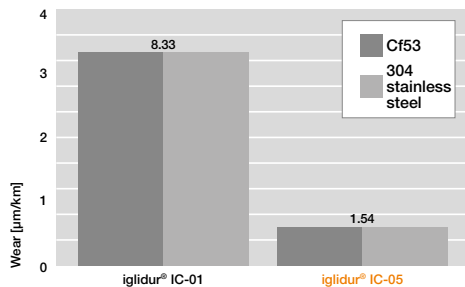
- Wear-resistant, lasts up to 4 times longer than iglidur® IC-01
- FDA and EU10/2011-compliant

Cost down

- Simple coating of metallic surfaces
- Maintenance-free

Proof

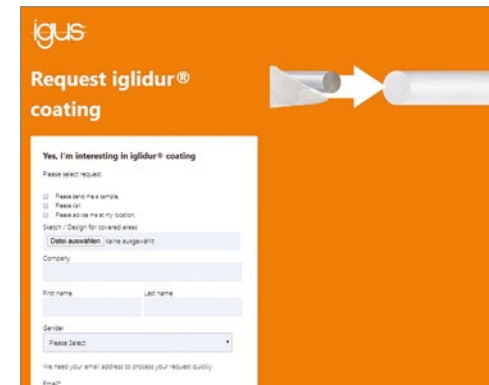
- Wear, rotating, $t = 23^{\circ}\text{C}$, $p = 1\text{MPa}$, $v = 0.3\text{m/s}$



Sustainability

- Environmentally friendly as no additional lubricants needed
- Good coefficient of wear and therefore a long service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:

www.igus.eu/plastic2oil



www.igus.eu/coating-requests

General properties

Colour blue

Mechanical properties

Crosscut n.s.

Thermal properties

Max. long-term application temperature +80°C

Max. short-term application temperature +90°C

Min. application temperature -40°C

Electrical properties

Specific contact resistance > 10¹⁴ Ωcm

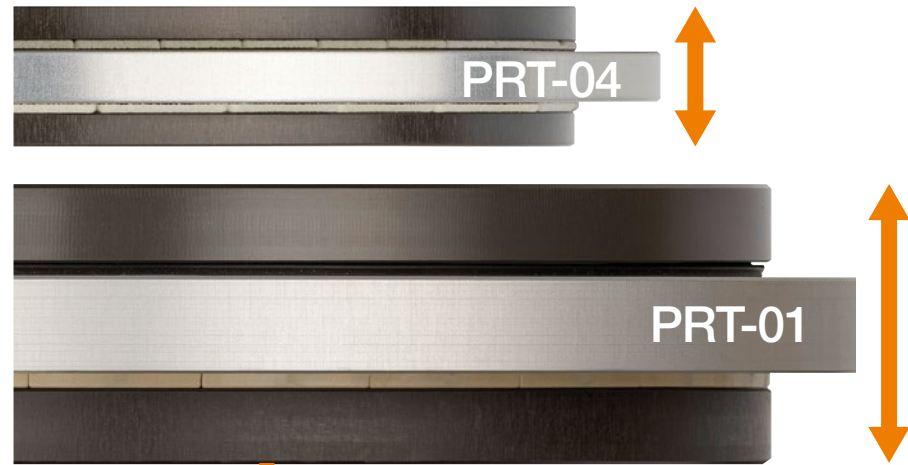
Surface resistance > 10¹⁴ Ω

igidur®	IC-01	IC-02	IC-03	IC-04	IC-05	IC-06
Colour	white	black	yellow	black	blue	cream
Max. application temperature [°C]	90	90	140	300	80	140

Available upon request



... flat and cost-effective ... compact, lightweight and cost-effective ... iglidur® PRT-04 ...



... effective ...

Tech up

- 50% lower height compared to the PRT-01
 - Consistent lightweight construction with the use of aluminium
 - Predictable service life
- www.igus.eu/prt-expert

Cost down

- 25% more cost-effective than the same diameter of PRT-01 series
- Up to 50% more cost-effective than the stainless steel versions
- Ready-to-install solutions in dozens of versions thanks to modular system
- Predictable service life

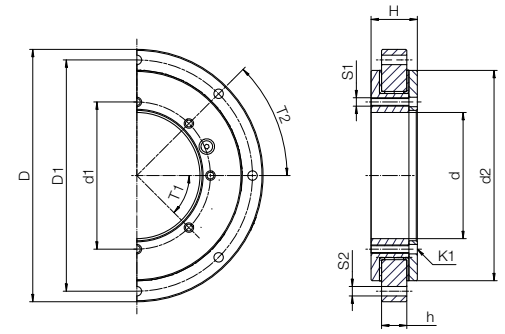
Proof



Sustainability

- 60% lighter compared to the PRT-01 series, therefore less mass to move in your application
- Wear-resistant, lubrication-free and maintenance-free iglidur® sliding elements
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

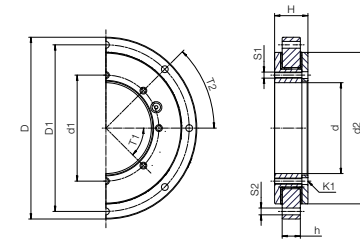
Available versions	PRT-01	PRT-04
Stainless steel	✓	✓
Spacing ring	✓	✓
Drive pin	✓	✓
Large outer ring	✓	✓
Outer drive ring	✓	✓
Collar clamp with grooves	-	✓
Collar clamp	✓	-
Wear measurement	✓	-
Manual clamp	✓	-
Position indicator	✓	-
Manual clamp	✓	-
Angle limit	New	New
Latching	-	New
Inner drive teeth	-	New



Dimensions [mm]

Part No.	D	D1	d1	d	d2	H	h	T1	T2	S1	S2	K1 for screw
PRT-04-50	110	100	60	50	90	16	6	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-60	120	110	70	60	100	16	6	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-100	160	150	110	100	140	16	6	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-150	210	200	160	150	190	16	6	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-200	260	250	210	200	240	16	6	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-300	360	350	310	300	340	16	6	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5

Available from stock



... install individually ...
 ... with the practical spacing ring, the PRT-04 can also be screwed onto flat surfaces very easily ...

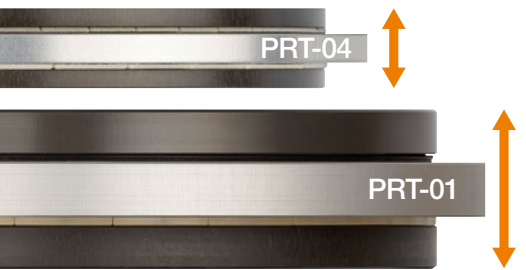
Tech up

- Allows you to easily replace an existing PRT with the PRT-04 with the same connection sizes

Cost down

- PRT-04 about 20% more cost-effective than a PRT-01 of the same installation size

Proof



Sustainability

- Up to 60% less weight and therefore less energy consumption
- Environmentally friendly due to the absence of lubricants
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Dimensions [mm]

Part No.	D	D1	d1	d	d2	H	h1	h	T1	T2	S1	S2	K1 for screw
Standard with M4 thread in mounting ring													
PRT-04-50-M4	110	100	60	50	90	16	-	6	8×45°	8×45°	M4	M4	Ø4.5
PRT-04-60-M4	120	110	70	60	100	16	-	6	8×45°	8×45°	M4	M4	Ø4.5
PRT-04-100-M4	160	150	110	100	140	16	-	6	8×45°	8×45°	M4	M4	Ø4.5
PRT-04-150-M4	210	200	160	150	190	16	-	6	16×22.5°	16×22.5°	M4	M4	Ø4.5
PRT-04-200-M4	260	250	210	200	240	16	-	6	16×22.5°	16×22.5°	M4	M4	Ø4.5
PRT-04-300-M4	360	350	310	300	340	16	-	6	16×22.5°	16×22.5°	M4	M4	Ø4.5
Standard with large mounting ring													
PRT-04-50-G	150	135	60	50	90	16	-	6	8×45°	16×22.5°	M4	Ø6.6	Ø4.5
PRT-04-60-G	160	160	70	60	100	16	-	6	8×45°	20×18°	M4	Ø5.5	Ø4.5
PRT-04-100-G	185	185	110	100	140	16	-	6	8×45°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-150-G	250	250	160	150	190	16	-	6	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-200-G	300	300	210	200	240	16	-	6	16×22.5°	16×22.5°	M4	Ø5.5	Ø4.5
PRT-04-300-G	450	450	310	300	340	16	-	6	16×22.5°	16×22.5°	M4	Ø9	Ø4.5
Standard with spacer mounting ring													
PRT-04-50-DRI	110	100	60	50	90	17	1	12	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-60-DRI	120	110	70	60	100	17	1	12	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-100-DRI	160	150	110	100	140	17	1	12	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-150-DRI	210	200	160	150	190	17	1	12	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-200-DRI	260	250	210	200	240	17	1	12	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-300-DRI	360	350	310	300	340	17	1	12	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5

Available from stock



New



for even more com

... lightweight, small installation space and cost-effective ...

Tech up

- Now, possibility of even more compact drive
- Save installation space with internal drive ring

Cost down

- About 20% more cost-effective than PRT-01 series
- Ready-to-install solution, no need to build it yourself
- 3D construction data available for free

Proof

- PRTs already in use for many years (e.g. in automated guided vehicles)



Sustainability

- Compact design means 60% less weight compared to the PRT-01 series
- Environmentally friendly due to the absence of lubricants
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:

www.igus.eu/plastic2oil



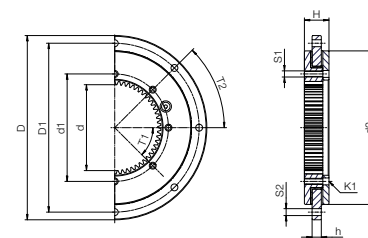
compact drive solutions

PRT-04 with inner drive teeth ...

Part No.	D1	d1	d	d2	H	h1	h	T1	T2	S1	S2	K1
Standard with gear profile												
PRT-04-50-TO-ST	100	60	50	90	17	1	12	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-60-TO-ST	110	70	60	100	17	1	12	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-100-TO-ST	150	110	100	140	17	1	12	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-150-TO-ST	200	160	150	190	17	1	12	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-200-TO-ST	250	210	200	240	17	1	12	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-300-TO-ST	350	310	300	340	17	1	12	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5

Part No.	z	D	z	D	z	Module	D
PRT-04-50-TO-	38	118.9	76	120.0	118	1	120
PRT-04-60-TO-	42	131.7	83	131.0	128	1	130
PRT-04-100-TO-	54	69.9	108	170.9	168	1	170
PRT-04-150-TO-	70	220.8	140	221.8	218	1	220
PRT-04-200-TO-	86	271.7	171	271.2	268	1	270
PRT-04-300-TO-	117	370.4	234	371.4	368	1	370

Part No.	D	d	H	h	z	Module
Inner drive teeth						
PRT-04-50-TI-ST	110	46	16	6	48	1
PRT-04-60-TI-ST	120	56	16	6	58	1
PRT-04-100-TI-ST	160	96	16	6	98	1
PRT-04-150-TI-ST	210	146	16	6	148	1
PRT-04-200-TI-ST	260	196	16	6	198	1
PRT-04-300-TI-ST	360	296	16	6	298	1



Available from stock



... torsionally rigid

... stainless steel with iglidur® F2 sliding elements - cond

Tech up

- ESD-compliant
- Completely maintenance-free
- Corrosion-resistant

Cost down

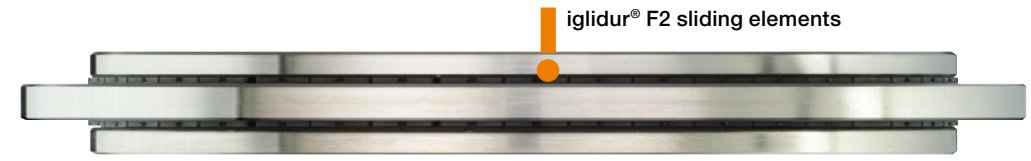
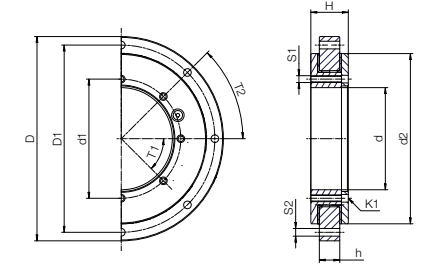
- Around 50% more cost-effective than a PRT-01 version of the same installation size
- Ready-to-install solution, no need to build it yourself
- 3D construction data available for free

Proof

- Version tried-and-tested for a long time with the PRT-01 slewing rings

Sustainability

- Compact design means 60% less weight compared to the PRT-01 series
- Environmentally friendly due to the absence of lubricants
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Dimensions [mm]

Part No.	D1	d1	d	d2	H	h1	h	T1	T2	S1	S2	K1 for screw
PRT-04-50-ESD	110	100	60	50	90	16	6	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-60-ESD	120	110	70	60	100	16	6	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-100-ESD	160	150	110	100	140	16	6	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-150-ESD	210	200	160	150	190	16	6	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-200-ESD	260	250	210	200	240	16	6	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-300-ESD	360	350	310	300	340	16	6	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5

Available from stock



... easily positioned

... install attachments in no time at all and position them



afterwards ... PRT-04 with slot nut profile ...

Tech up

- Easy assembly and disassembly of attachments
- Particularly practical if a workpiece carrier has to be changed

Cost down

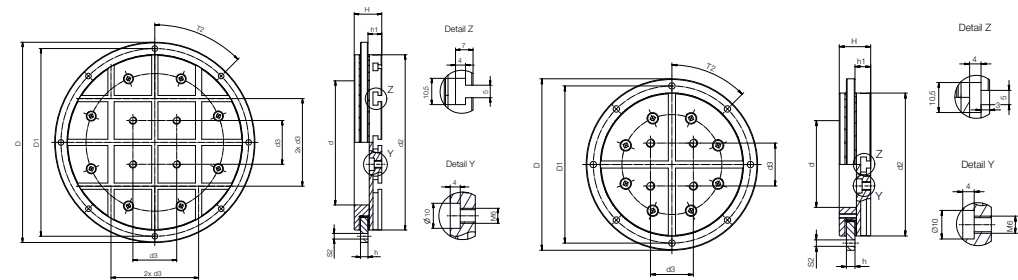
- Solution from one source, no own design necessary
- No special mountings necessary, simply screw on with T-slot nuts

Proof

- Common solution and installable from all sides

Sustainability

- Up to 60% less weight than for the PRT-01-series and therefore less energy consumption
- Fewer components that have to be specially manufactured
- Environmentally friendly due to the absence of lubricants
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil



Dimensions [mm]

Part No.	D	D1	d	d2	d3	H	h	h1	T2	S2
PRT-04-50-T	110	100	50	90	25	22	6	11	8x45°	Ø4.5
PRT-04-60-T	120	110	60	100	30	22	6	11	8x45°	Ø4.5
PRT-04-100-T	160	150	100	140	35	22	6	11	8x45°	Ø4.5
PRT-04-150-T	210	200	150	190	35	22	6	11	16x22.5°	Ø4.5
PRT-04-200-T	260	250	200	240	35	22	6	11	16x22.5°	Ø4.5
PRT-04-300-T	360	350	300	340	50	22	6	11	16x22.5°	Ø4.5

Available from stock

New



... precise adjustm ent ...

... stop motion slewing ring with defined latching points ...

ent ...

PRT-04 with locking mechanism ...

Tech up

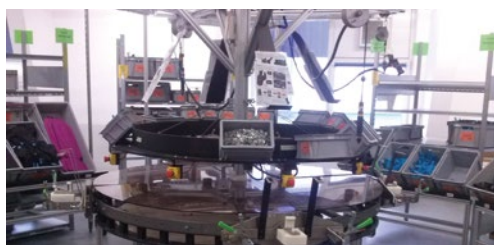
- Repeatably defined location points
- Also use with the optional T-slot plate, e.g. for your assembly table

Cost down

- About 20% more cost-effective than PRT-01 series
- Ready-to-install solution, no need to build it yourself
- 3D construction data available for free

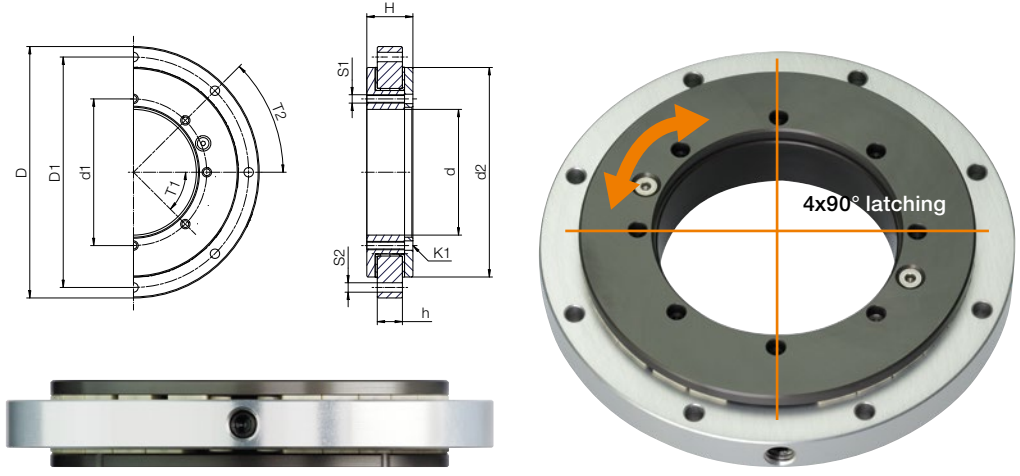
Proof

- Latching forces tested in the igus® laboratory for service life
- Already in use by different customers before the official roll-out



Sustainability

- Compact design means 60% less weight compared to the PRT-01 series
- Environmentally friendly due to the absence of lubricants
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Dimensions [mm]

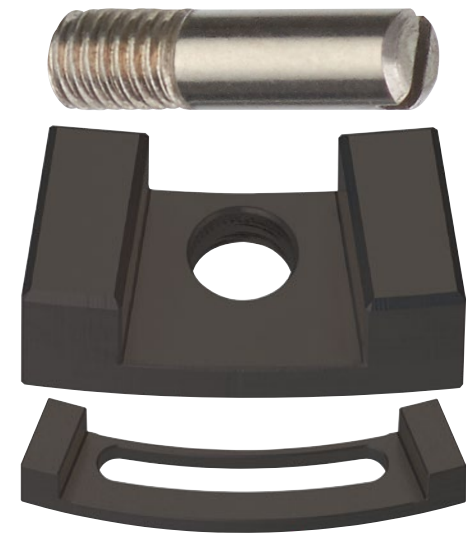
Part No.	D	D1	d1	d	d2	H	h	T1	T2	S1	S2	K1
PRT-04-50-R	110	100	60	50	90	20	6	9	8	8x45°	8x45°	M4
PRT-04-60-R	120	110	70	60	100	20	6	9	8	8x45°	8x45°	M4
PRT-04-100-R	160	150	110	100	140	20	6	9	8	8x45°	8x45°	M4
PRT-04-150-R	210	200	160	150	190	20	6	9	8	16x22.5°	16x22.5°	M4
PRT-04-200-R	260	250	210	200	240	20	6	9	8	16x22.5°	16x22.5°	M4
PRT-04-300-R	360	350	310	300	340	20	6	9	8	16x22.5°	16x22.5°	M4

Available from stock

New



... limit rotation ...
 ... determine and individually adjust the angle stops ...



PRT-04 with angle stop ...

Tech up

- Already successfully in use for years with PRT-01
- Compact design means 60% less weight compared to the PRT-01 series

Cost down

- About 20% more cost-effective than PRT-01 series
- Ready-to-install solution, no need to build it yourself
- 3D construction data available for free

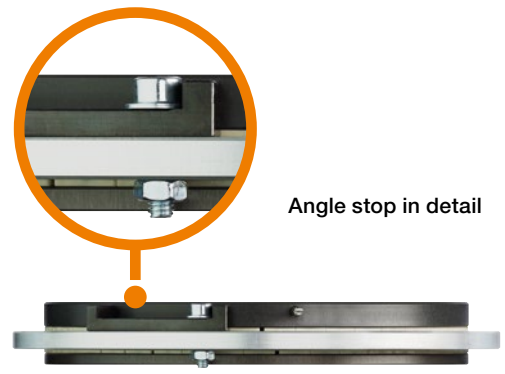
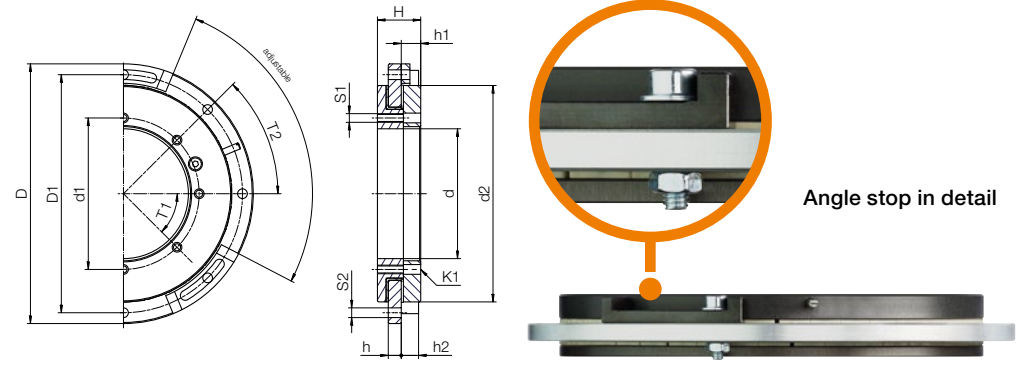
Proof

- Tested in the igus® laboratory for mechanical strength in continuous use



Sustainability

- Environmentally friendly due to the absence of lubricants
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Angle stop in detail

Dimensions [mm]

Part No.	D	D1	d1	d	d2	H	h	h1	h2	T1	T2	S1	S2	K1
PRT-04-50-TS	110	100	60	50	90	20	6	9	8	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-60-TS	120	110	70	60	100	20	6	9	8	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-100-TS	160	150	110	100	140	20	6	9	8	8×45°	8×45°	M4	Ø4.5	Ø4.5
PRT-04-150-TS	210	200	160	150	190	20	6	9	8	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-200-TS	260	250	210	200	240	20	6	9	8	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5
PRT-04-300-TS	360	350	310	300	340	20	6	9	8	16×22.5°	16×22.5°	M4	Ø4.5	Ø4.5

Available from stock



.. iglidur® PRT with ... slewing ring provides information on the need for main



sensor ... tenance: iglidur® isense PRT ...

▲ Tech up

- First wear-detecting slewing ring. After reaching a defined level of wear, the system informs the users so that they can plan the maintenance.
- Without unexpected downtime

▼ Cost down

- No unplanned machine downtime
- Early information about bearing wear prevents the assembly from damage

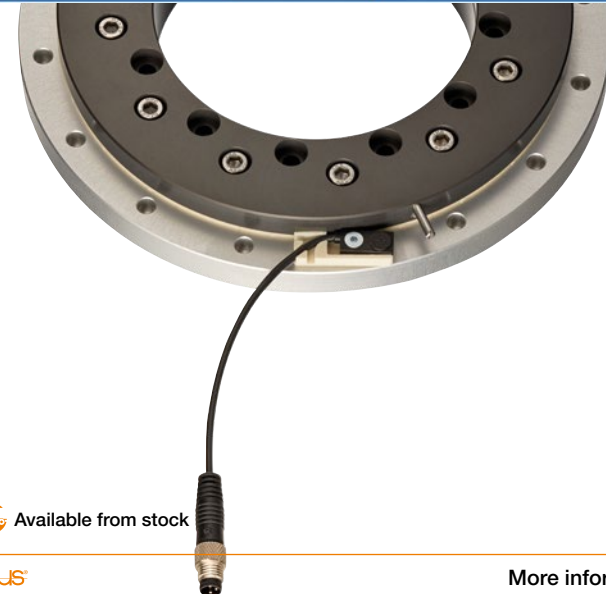
■ Proof

- Tested in our own test rigs inside and outside.

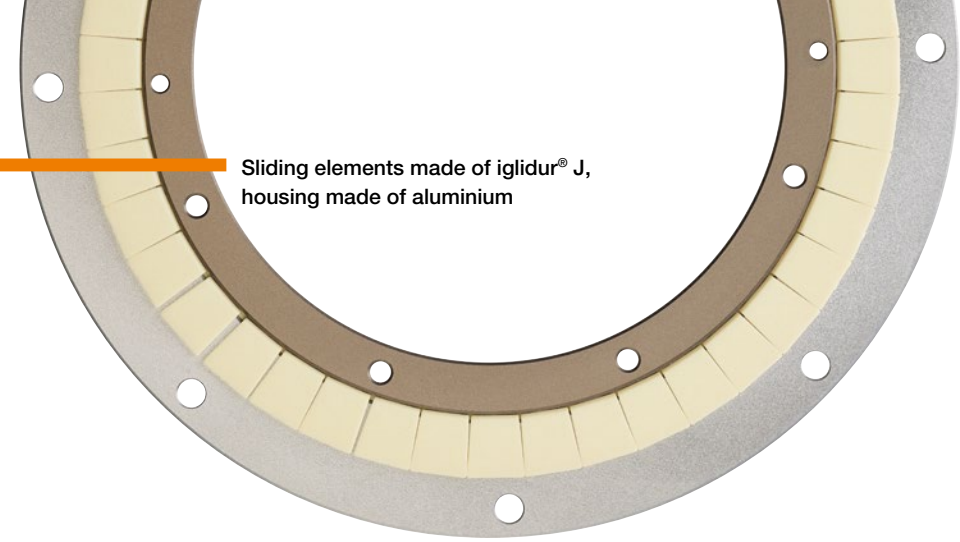


● Sustainability

- No more unnecessary premature replacement of the complete slewing ring
- No replacement of the complete component due to damage to wearing sliding elements
- Environmentally friendly due to the absence of lubricants
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Available from stock



Sliding elements made of iglidur® J, housing made of aluminium

... drive it directly ...

... with integrated drive pin for direct connection to motors ...

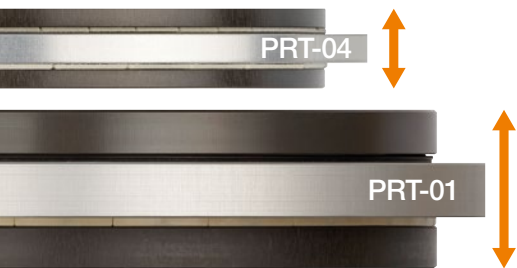
Tech up

- Direct connection of the drive via coupling to the PRT-04

Cost down

- Off the shelf design
- Direct connection in one component

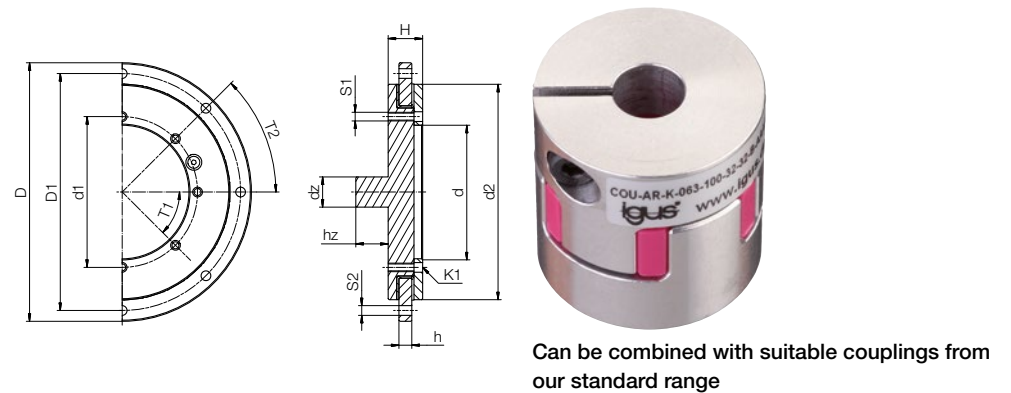
Proof



Sustainability

- Up to 60% less weight and therefore less energy consumption
- In addition, environmentally friendly due to the absence of lubricants
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:

www.igus.eu/plastic2oil



Can be combined with suitable couplings from our standard range

Dimensions [mm]

Part No.	D	D1	d1	d	d2	dz	hz	H	h	T1	T2	S1	S2	K1
Standard with DrivePin														
PRT-04-50-DP	110	100	60	52	90	14 h6	15	16	6	8x45°	8x45°	M4	Ø4.5	Ø4.5
PRT-04-60-DP	120	110	70	62	100	14 h6	15	16	6	8x45°	8x45°	M4	Ø4.5	Ø4.5
PRT-04-100-DP	160	150	110	102	140	14 h6	15	16	6	8x45°	8x45°	M4	Ø4.5	Ø4.5
PRT-04-150-DP	210	200	160	152	190	14 h6	15	16	6	16x22.5°	16x22.5°	M4	Ø4.5	Ø4.5
PRT-04-200-DP	260	250	210	202	240	14 h6	15	16	6	16x22.5°	16x22.5°	M4	Ø4.5	Ø4.5
PRT-04-300-DP	360	350	310	302	340	14 h6	15	16	6	16x22.5°	16x22.5°	M4	Ø4.5	Ø4.5

Available from stock

new



56

iglidur® Tribo-Cut - your CNC machining service for individually machined parts

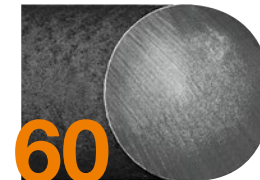
62 highlight 2020

Bar stock plate strips for more design freedom



58

More choice - iglidur® E7 new as bar stock round bar for pivoting movements



60

More choice - iglidur® HLW for high loads and temperatures



62

Bar stock plate strips for more design freedom



64

Low-profile tribo-tape as flat sheet material



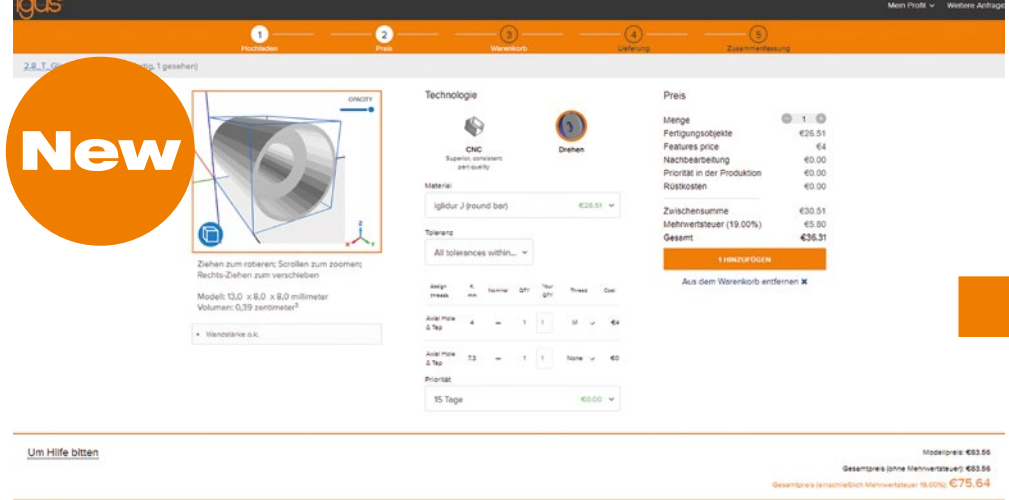
Find product and calculate service life online

Tech up, Cost down. It's our job.

Lubrication-free made easy ...

new... iglidur®

... Bar stock



... iglidur® Tribo-Cut ...

... your CNC machining service for individually machined parts made of iglidur® bar stock ...

Tech up

- Get prices within seconds
- Easy to use
- Transparency over the entire ordering process

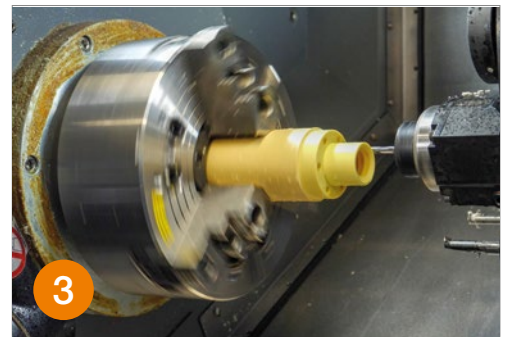
Cost down

- Saves unnecessary waiting times and costs
- Decisions can be made quickly

Proof

Sustainability

- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



- Tribo-Cut is so simple**
1. Upload 3D model
 2. Specify requirements, get price and order component
 3. We machine your component according to your specifications
 4. You receive your product

New

... more flexibility ...

... iglidur® E7 new as bar stock round bar for pivoting movements and as plate strips ...

Tech up

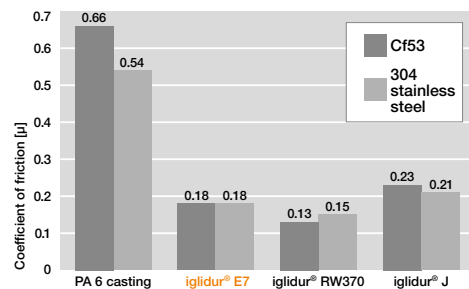
- 40% lower coefficient of friction than PA6 casting
- Quiet operation due to good dampening properties
- Long service life with low loads
- iglidur® E7 is the specialist for steel and stainless steel shafts

Cost down

- Low coefficient of friction allows smooth movements and a downsizing of the drives

Proof

- Coefficient of friction linear ($t=23^{\circ}\text{C}$, $p=8\text{MPa}$, $v=1.3\text{mm/s}$, against S355MC galvanised)



Sustainability

- No lubrication necessary
- Reduced energy consumption due to smooth movements
- iglus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:

www.igus.eu/plastic2oil

ments and as plate strips ...

General properties

Density	1.05g/cm ³
Colour	dark grey
Max. moisture absorption at +23°C and 50% r. h.	< 0.1% weight
Max. total moisture absorption	< 0.1% weight

Electrical properties

Specific contact resistance	> 10 ⁹ Ωcm
Surface resistance	> 10 ⁹ Ω

Mechanical properties

Flexural modulus	1,477MPa
Flexural strength	22MPa
Max. recommended surface pressure	18MPa
Shore D hardness	61

Thermal properties

Max. long-term application temperature	+70°C
Max. short-term application temperature	+90°C
Min. application temperature	-50°C


Dimensions [mm]

Part No.	Material thickness	Width (W)
Plate strips		
SFPE7-30-160-□	30	160
Round bars		
	Outer Ø	Inner Ø
SFRE7-3000-□	30	0
SFRE7-4000-□	40	0

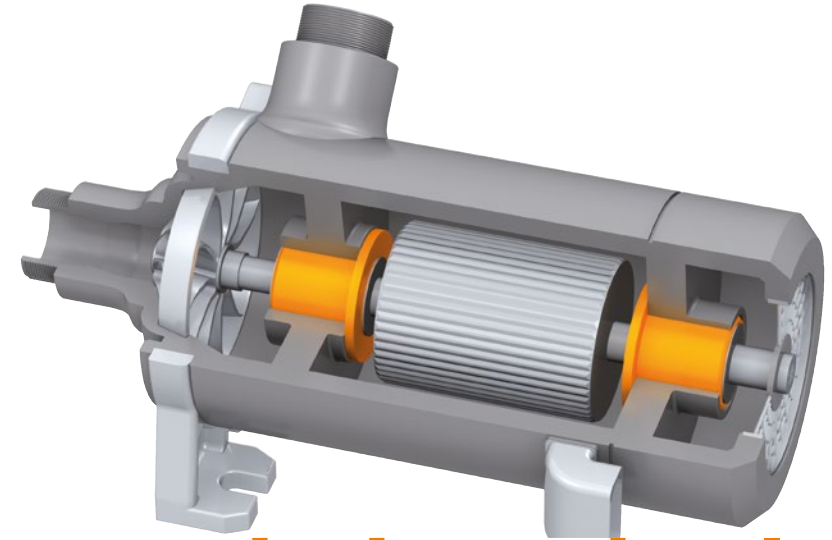
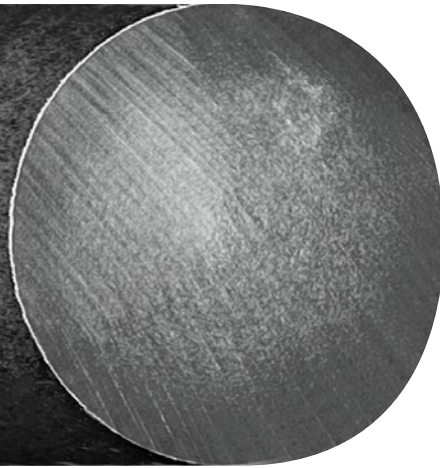
□ = In your required length, freely selectable between 50mm and 1,000mm. Cut-to-size parts are delivered oversized.



igidur® E7 for use in railway technology

 Available from stock

New



resistant to temperature and chemicals ...

... low coefficient of friction when used with hardened shafts. ... iglidur® HLW ...

Tech up

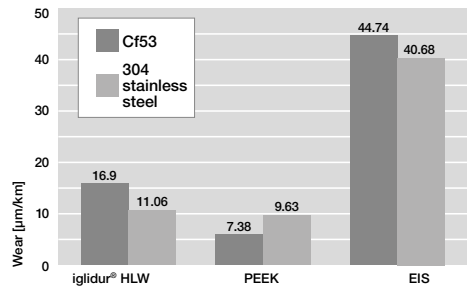
- Up to 50% lower coefficient of friction than PEEK and PPS
- iglidur® HLW can be used in high humidity and under water
- For temperatures +200°C
- Excellent chemical resistance

Cost down

- Approx. 50% more cost-effective than PEEK
- Fast and cost-effective machining for prototypes and small up to medium volume requirements

Proof

- Wear, rotating, $t=23^{\circ}\text{C}$, $p=1\text{MPa}$, $v=0.3\text{m/s}$



Sustainability

- Made from 100% recycled material
- No lubrication necessary
- iglus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

General properties	
Density	1.71g/cm ³
Colour	grey
Max. moisture absorption at +23°C and 50% r. h.	0.1% weight
Max. total moisture absorption	0.3% weight
Electrical properties	
Specific contact resistance	> 10 ⁶ Ωcm
Surface resistance	> 10 ⁹ Ω

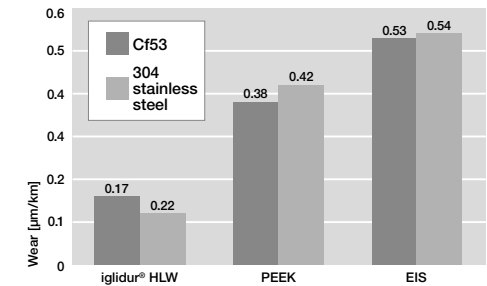
Mechanical properties	
Flexural modulus	11,000MPa
Flexural strength	160MPa
Max. recommended surface pressure	89MPa
Shore D hardness	87
Thermal properties	
Max. long-term application temperature	+200°C
Max. short-term application temperature	+240°C
Min. application temperature	-40°C



Machining of bar stock round bar

Coefficient of friction, rotating

$t=23^{\circ}\text{C}$, $p=1\text{MPa}$, $v=0.3\text{m/s}$



Available from stock



6mm – 50mm

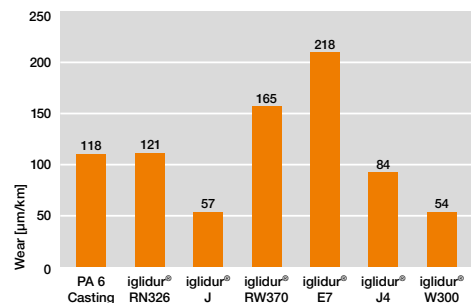
... less wear ...
 ... bar stock plate strips – for more design freedom ...

Tech up

- 11 materials available as plate strips
- Four new dimensions provide more possibilities to produce large-volume and delicate components
- iglidur® plate strips are always 160mm wide and no more than 1000mm long; they are currently available in five thicknesses (6, 10, 15, 30 & 50mm)
- 2 new materials: iglidur® A350 for the food sector, iglidur® HSD350 is hot steam sterilisable

Proof

- Linear wear (t= 23°C, p= 8MPa, v= 1.3 mm/s, against S355MC galvanised)



Cost down

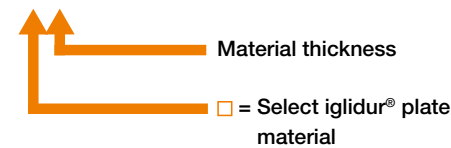
- Buy only what you need - free choice of length (50-1,000mm)
- Four new dimensions reduce waste and processing costs

Sustainability

- New dimensions reduce waste during machining
- iglus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Dimensions plate material [mm]

Part No.	Material thickness	Width (W)
SFP □-□-160*	15 / 30 / 50	160



Available material thickness [mm]

	6	10	15	30	50
igidur®					
A350		New			
A500	New	New	●	New	New
C500			●		
E7				New	
HSD350		New			
J4	New		●	●	New
J350			●		
K230			●		
RW370	New		●		
W300			●		
X	New	New	●		

* In your required length, freely selectable between 50mm and 1,000mm. Cut-to-size parts are delivered oversized.

Available from stock

New

... flat and ready to install ...

... our proven tribo-tape as flat sheet material ...



Tech up

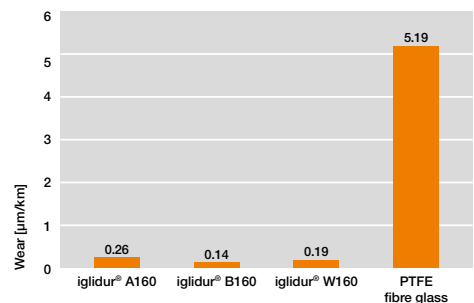
- Flat packed and delivered
- Reduction of the pre-load by not rolling the tape

Cost down

- Save costs and choose from four dimensions according to your needs
- Less waste

Proof

- Wear (t= 23 °C, v= 9,600 mm/min., F= 10 N, against stainless steel pin)



Sustainability

- Four dimensions help to reduce waste
- No lubrication necessary
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

General specifications	tribo-tape	A160	B160	W160
Density [g/cm ³]		1.00	1.00	0.95
Colour		blue	black	white
Max. moisture absorption at +23°C and 50% r. h. [% weight]		0.1	0.1	0.1
Max. total moisture absorption [% weight]		0.1	0.1	0.1
Electrical properties				
Specific volume resistance [Ωcm]		> 10 ¹²	> 10 ¹²	> 10 ¹²
Surface resistance [Ω]		> 10 ¹²	> 10 ¹²	> 10 ¹²
Mechanical properties				
Flexural modulus [MPa]		1,151	852	799
Flexural strength [MPa]		19	14	14
Shore D hardness		60	90	90
Thermal properties				
Max. long-term application temperature		+90	+90	+90
Max. short-term application temperature		+100	+100	+100
Min. application temperature		-50	-50	-50

Dimensions [mm]		
Part No.	Length	Width
□-TB-005-1000-500-G	1,000	500
□-TB-005-500-500-G	500	500
□-TB-005-500-250-G	500	250
□-TB-005-250-250-G	250	250

□ = Select available iglidur® material: A160, B160, W160

Available upon request

new...

74 highlight 2020

Components from iglidur® I8-ESD for electrostatic discharge properties paired with high abrasion resistance

Tech up, Cost down. It's our job.



68

igidur® 3D printing service delivers even faster. In addition many more analyses and functions



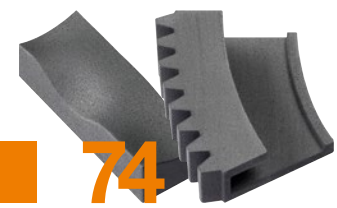
70

Multi-material components - two different materials can be combined, whether in 3D printing or injection moulding, for extreme strength and very long service life



72

Configure lead screw nuts and sliding plates in 60 seconds online, ready for shipment within 3 days



74

Components from iglidur® I8-ESD eliminate electrostatic charges due to ESD properties paired with high abrasion resistance



76

The new all-rounder tribo-filament iglidur® I190 - higher strength and excellent service life



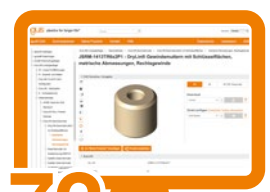
78

Fewer spool changes with the 8kg spools made of the tribo-filament iglidur® I150



80

Tribo-filament iglidur® A350 for food applications with high temperatures; 50% more cost-effective than PEEK filament



72

Configure lead screw nuts and sliding plates online

Lubrication-free made easy ...

new... iglidur®

... 3D printing



... customised parts
 ... iglidur® 3D printing service delivers even faster ... Automated

delivered worldwide
 analyses directly evaluate the feasibility online ...

Tech up

- Automatic feasibility evaluation directly online, e.g. wall thickness analysis and undercut analysis for print2mold
- Over 56 lubrication-free and maintenance-free iglidur® materials selectable for 3D printing or rapid tooling (print2mold)
- Quick selection of the right iglidur® material by entering individual environmental parameters
- Up to 50 times more durable than standard 3D printing materials
- Up to 50% faster through multiple uploads

Proof

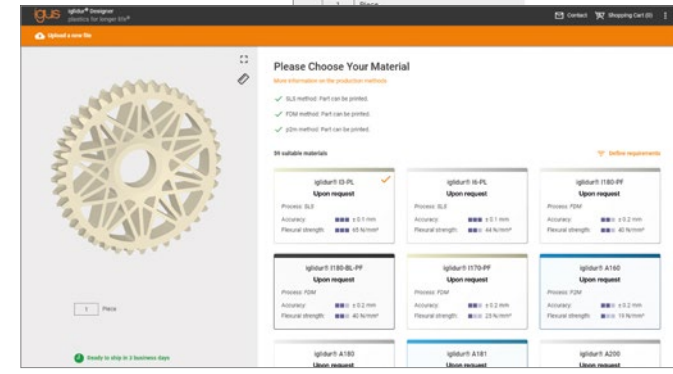
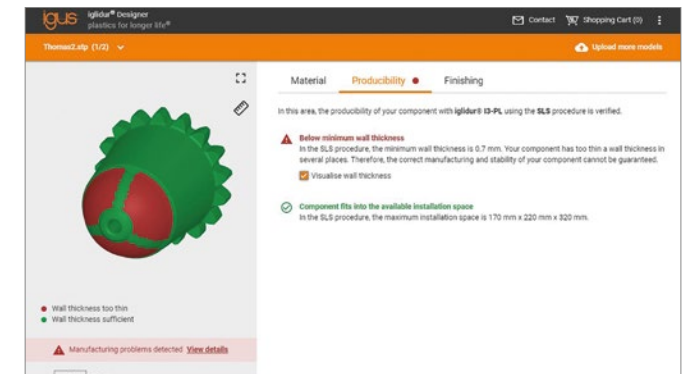
- 120,000 abrasion-resistant components made with laser sintering and filament printing methods in 2019
- 3D printing service life predictable online as plain bearing www.igus.eu/iglidur-expert and gear www.igus.eu/gear-expert
- 3D printing put to the test: www.igus.eu/info/3d-print-tribology-test
- Customer application: 3D printed gliders in motor vehicle: www.igus.eu/info/manus-steering-wheel
- Lubrication-free via 3D printing: www.igus.eu/3d-printing-lubrication-free

Cost down

- Simply upload your CAD model online. Price and delivery time are displayed directly: www.igus.eu/idd
- Online price calculation for dyeing black and polishing
- Delivery worldwide from two working days
- No minimum order value or quantity

Sustainability

- No lubrication necessary
- Hubs in North America, Europe and Asia, short and fast delivery routes
- No stock keeping, production on site as required
- 3D printing: low material requirements, since there is no waste or sprue
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Available worldwide from 2 working days

New



... multi-material components ...

... 2 different materials in 3D printing or injection moulding

... components ...

(print2mold) to combine the best material properties ...

Tech up

- Best component properties with the use of two polymers
- Lubrication and maintenance-free
- Extreme tensile module: 6.2GPa
- High strength: 110MPa
- 3D printing: 80% strength in the joint
- Injection moulding with 3D printed inserts, for higher complexity of the injection moulded part
- Service life up to 50 times longer than regular 3D printing materials

Proof

- 3D printing put to the test:
www.igus.eu/info/3d-print-tribology-test
- Grippers with hard/soft connection in the packaging industry:
www.igus.eu/info/3d-print-grippers

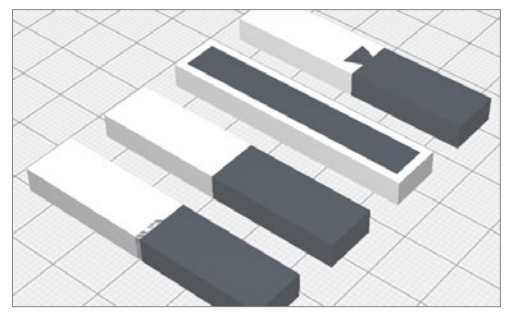
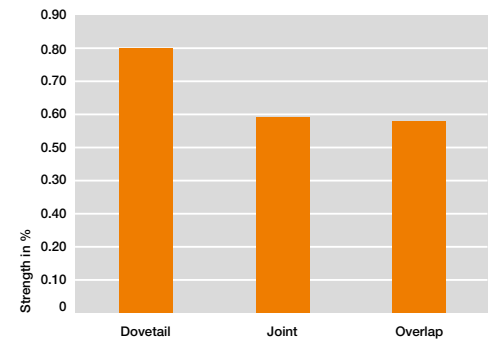
Cost down

- Efficient from quantity 1 in 3D printing, since no tooling costs
- By injection moulding with 3D printed moulds for larger quantities
- Delivery from 3 business days upon request:
www.igus.eu/3d-printing-request

Sustainability

- No lubrication necessary
- Reduced material requirements due to high strength and high stiffness
- Ideal for lightweight construction
- 3D printing: low material requirements, since there is no waste or sprue
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil

Strength of multi-material connection



i Contact us for further information; we will be happy to help you make your ideas reality.

Available upon request from 3 working days



... **configure easily**
... configure lead screw nuts and sliding plates in 60 sec

online ...
... ready for shipment within 3 days ...

Tech up

- Lubrication and maintenance-free
- 18 times longer service life than ABS (3D printing) in lead screw nut applications
- 33 times longer service life than with ABS (3D printing) in linear applications
- Configurators for plain bearings, gears, gear racks, sliding plates, drive nuts and rollers

Cost down

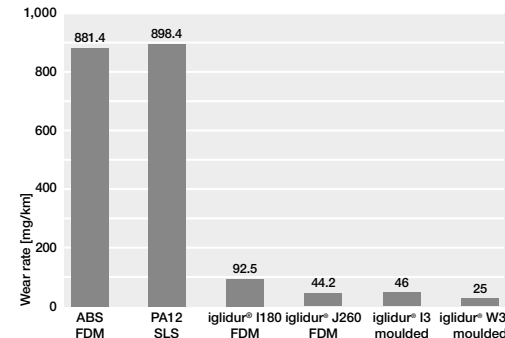
- No time-consuming design work
- Efficient, no minimum order quantity
- Trapezoidal thread in the 3D model, therefore no rework
- No CAD knowledge or CAD software necessary
- Free online tool
www.igus.eu/cad-configurators
- Online prices immediately, 3D printed in 3 days:
www.igus.eu/idd

Proof

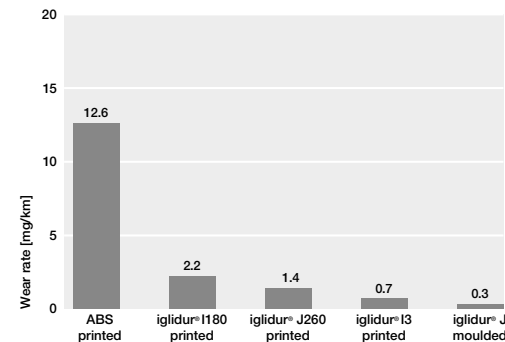
- 3D printing put to the test:
www.igus.eu/info/3d-print-tribology-test
- 3D printed drive nut in space travel:
www.igus.eu/info/manus-space-travel
- 3D printed plain bearings under test:
www.igus.eu/filament-test

Sustainability

- No lubrication necessary
- No warehouse required, any geometry in three days
- 3D printing: low material requirements, since there is no waste or sprue
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil



Wear, rotating
p= 20MPa; v= 0.01m/s, VA



Wear test: drive nut
F= 129N; l= 370mm; n= 290rpm



Available in 3 days

New



... components with

... ideal for all applications where electrostatic charges

ESD properties ...

must be avoided ... iglidur® I8-ESD ...

Tech up

- Electrostatically dissipative (ESD)
- Contact resistance 10^6 to 10^9 ohms * cm
- Excellent service life – for example, a pivoting abrasion resistance factor of 2 to PA 12
- Permanent black: component consistently black
- Can be processed on regular laser sintering systems
- Lubrication and maintenance-free

Cost down

- No minimum order quantity, no tool costs
- Delivery time three days outbound:
www.igus.eu/3d-printing-request

Proof

- ESD properties are essential, particularly in the electronics industry, for avoiding damage to electronic components
- Also interesting for all other industries where it is important to avoid electrostatic charges
- Test: permanent black
www.igus.eu/I8-ESD-black-test

Sustainability

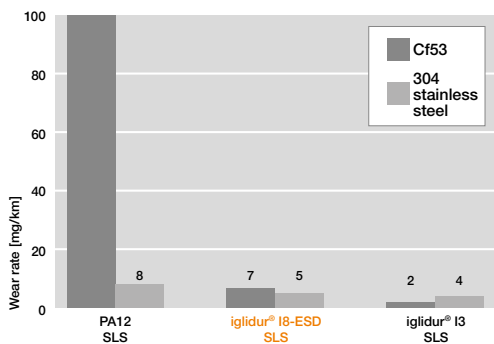
- No lubrication necessary
- Can be recycled
- 3D printing: low material requirements, since there is no waste or sprue
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil

General properties	
Density	1.03g/cm ³
Colour	black
Max. moisture absorption at +23°C and 50% r. h.	0.8% weight
Max. total moisture absorption	1.9% weight
Electrical properties	
Specific contact resistance	$2.8 \times 10^7 \Omega\text{cm}$
Surface resistance	$3.6 \times 10^7 \Omega$

Mechanical properties	
Flexural modulus	2,200MPa
Flexural strength	63MPa
Max. recommended surface pressure	35MPa
Thermal properties	
Max. long-term application temperature	+80°C
Max. short-term application temperature	+140°C
Min. application temperature	-40°C

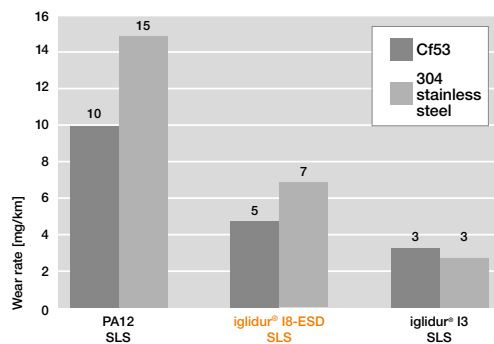
Wear, linear

$p = 1\text{MPa}$, $v = 0.01\text{m/s}$



Wear, pivoting

$p = 2\text{MPa}$, $v = 0.01\text{m/s}$



Available from 3 days

New



... strong and abrasion-resistant parts ...

... Higher strengths and increased temperature stability with the new all-round tribological filament iglidur® I190 ...

Tech up

- Flexural strength 80MPa, best iglidur® filament for common 3D printers
- Excellent service life - 50 times higher abrasion resistance than ABS
- Lubrication and maintenance-free
- Can be processed by commercially available 3D printers
- Application temperature: 90°C (after tempering of the component)
- Easy to process

Proof

- 3D printing put to the test: www.igus.eu/info/3d-print-tribology-test
- Laboratory report of flexural strength: www.igus.eu/I190-strength-test

Cost down

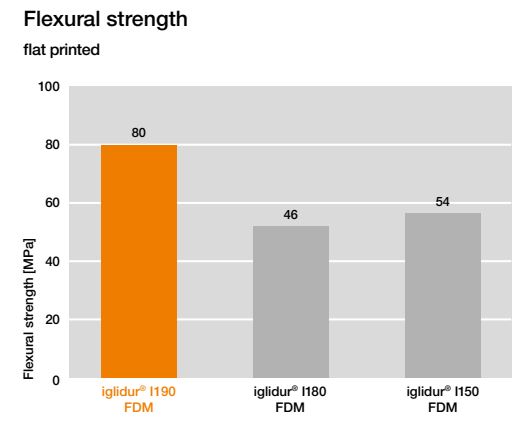
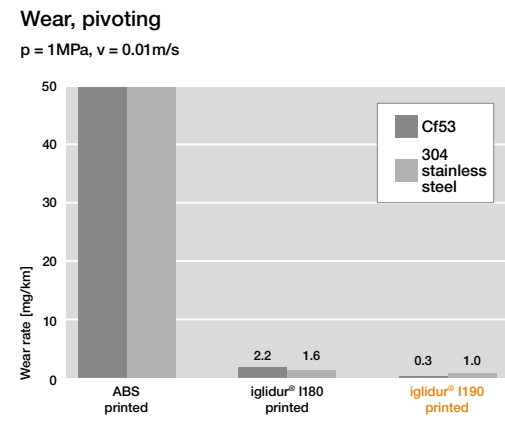
- No minimum order quantity, no tool costs
- As filament and in 3D printing service: www.igus.eu/3d-printing-request

Sustainability

- No lubrication necessary
- Can be recycled
- 3D printing: low material requirements, since there is no waste or sprue
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

General properties	
Density	1.3g/cm ³
Colour	yellow
Max. moisture absorption at +23°C and 50% r. h.	0.3% weight
Max. total moisture absorption	n.s.
Electrical properties	
Specific contact resistance	10 ¹² Ωcm
Surface resistance	10 ¹¹ Ω

Mechanical properties	
Flexural modulus	2,650MPa
Flexural strength	70MPa
Max. recommended surface pressure	35MPa
Thermal properties	
Max. long-term application temperature	+90°C
Max. short-term application temperature	+110°C
Min. application temperature	-40°C



Available from stock / from 5 working days in printing service



New



... fewer spool changes ...



... suitable for large capacity printers or regular 3D printers ...

Tech up

- For large components up to 1m³, tested on large scale printers
- Long service life - up to 50 times more abrasion-resistant than ABS and PLA in the 3D printing
- Food-compatible according to EU10/2011 regulation
- The tribo-filament that is easiest to process
- Lubrication and maintenance-free

Cost down

- 13% reduced €/kg price
- Fewer spool changes
- Design data spool holder: www.igus.eu/spool-holder-8kg

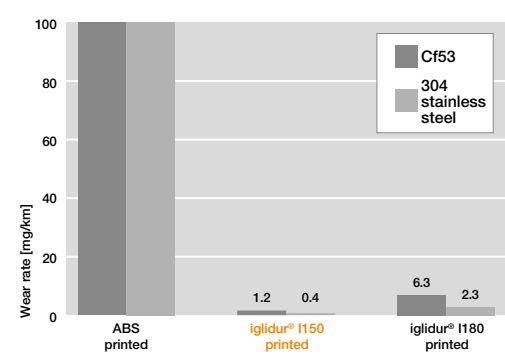
Proof

- 3D printing put to the test: www.igus.eu/info/3d-print-tribology-test
- Video of the abrasion test: www.igus.eu/3d-wear-test
- Processing on regular 3D printers: blog.igus.eu/ultimaker-igus-filament-collaboration

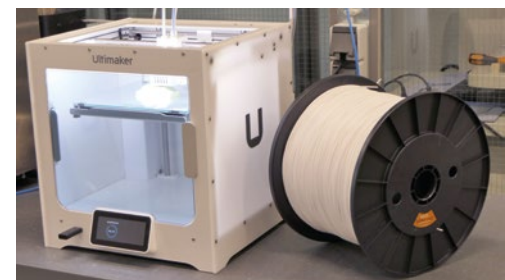
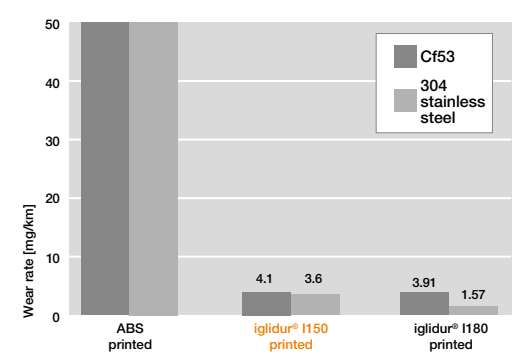
Sustainability

- No lubrication necessary
- Fewer leftover pieces, fewer spools
- Can be recycled
- 3D printing: low material requirements, since there is no waste or sprue
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Wear, linear
p = 1MPa; v = 0.1m/s, l = 5mm



Wear, pivoting
p = 1MPa, v = 0.01m/s



Available from stock

- Order filament online: www.igus.eu/tribofilament
- Calculate the service life www.igus.eu/iglidur-expert
- Online shop and price calculation www.igus.eu/3dprintservice
- Talk to us if you want to test iglidur® I150 filament for 3D printing yourself or 3D printed components made of iglidur® I150.



... food and temperature ...

... food-grade, self-lubricating and temperature-resistant ...

temperature ...

igidur® A350 tribo-filament ...

Tech up

- Lubrication and maintenance-free
- Food compatible according to FDA and EU10/2011
- Max. application temperature: +180 °C
- Fulfills the FAA requirements for fire protection for aircraft interior
- Up to 50% lower friction than with a PEEK filament
- Can be processed with high-temperature 3D printers with 180 °C installation space temperature
- Suitable for steam sterilisation

Proof

- Ideal for food applications in which either high temperatures play a role or great chemical resistance is necessary
- 3D printing put to the test:
www.igus.eu/info/3d-print-tribology-test

Cost down

- No minimum order quantity, no tool costs
- Costs 50% less than a PEEK filament
- 3D printing service upon request:
www.igus.eu/3d-printing-request

Sustainability

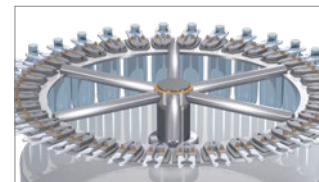
- No lubrication necessary
- Can be recycled
- 3D printing: low material requirements, since there is no waste or sprue
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at:
www.igus.eu/plastic2oil

General properties	
Density	1.42g/cm ³
Colour	blue
Max. moisture absorption at +23°C and 50% r. h.	0.6% weight
Max. total moisture absorption	1.9% weight
Electrical properties	
Specific contact resistance	> 10 ¹¹ Ωcm
Surface resistance	> 10 ¹¹ Ω

Mechanical properties	
Flexural modulus	1,250* / 1,390**MPa
Flexural strength	50* / 46**MPa
Max. recommended surface pressure	35MPa
Thermal properties	
Max. long-term application temperature	+180°C
Max. short-term application temperature	+210°C
Min. application temperature	-100°C

* printed flat ** printed upright

i Talk to us if you want to test iglidur® A350 as the filament for 3D printing yourself or 3D printed components made of iglidur® A350.

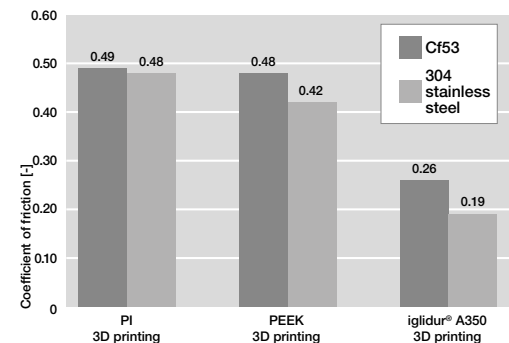


igidur® A350 as printed component in use in a bottle washing machine

📦 Filament: Available from stock
3D printing service upon request
www.igus.eu/3d-printing-request

Coefficient of friction, rotating

p = 1MPa, v = 0.3m/s



new...



86 highlight 2020

Design study: easy assembly thanks to flexible housing material and large undercut

Tech up, Cost down. It's our job.



84
Metallic housing with maintenance-free inner ring - igubal® KARM-12-MI-J-EK



86
Design study: easy assembly thanks to flexible housing material and large undercut



88
New angled balls can be easily assembled and disassembled



90
Spherical cap for control arms made of iglidur® J saves costs



92
igubal® ESQM-100 - solar pillow block bearing for square tubes



94
Interchangeable low-cost spherical balls made of iglidur® J4



96
Polymer spherical balls, resistant to dust and dirt, fitted in solid stainless steel housing



Find product and calculate service life online

Lubrication-free made easy ...

new... igubal

... Spherical bearing

New



... clip-on connecti

... metallic housing with maintenance-free inner ring ...

... igubal® KARM-12-MI-J-EK

Tech up

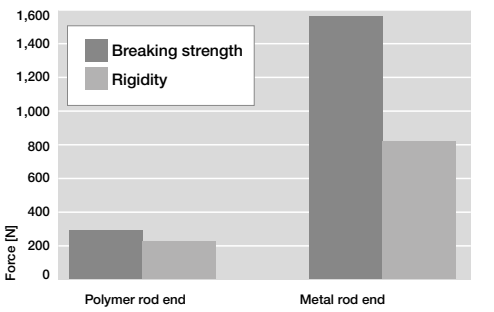
- Metallic housing: 5 times higher breaking strength than igumid G
- 10 times more abrasion-resistant against metallic spherical balls than polyamide
- Other materials possible (FDA, high-temperature and so on)

Cost down

- No minimum order quantity, no tool costs for igus® standard
- Short delivery time
- In preparation: M8, M10, M16

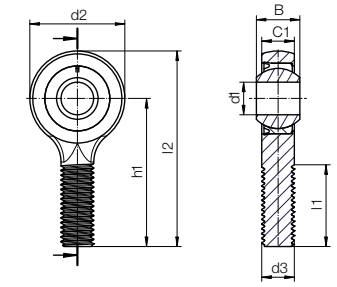
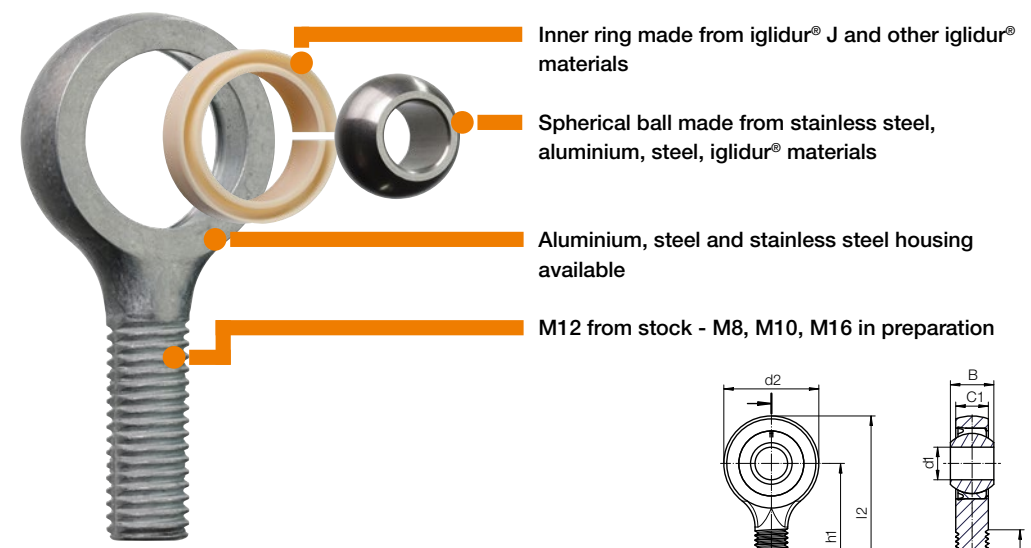
Proof

- Breaking force and stiffness vs. force comparison between polymer rod end and metal rod end



Sustainability

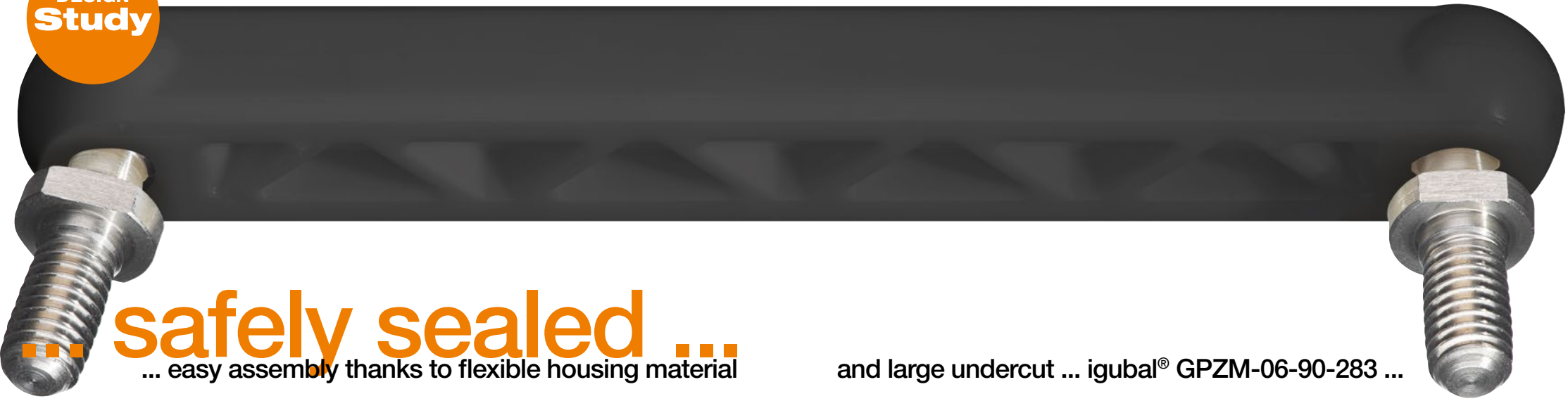
- No lubrication necessary
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil



Dimensions [mm]

Part No.	d1	d2	d3	h1	l1	l2	B	C1
KARM-12-MI-J-EK	24	35	M12	54.5	30	72	16	12

Available from stock



... safely sealed ...

... easy assembly thanks to flexible housing material

and large undercut ... igubal® GPZM-06-90-283 ...

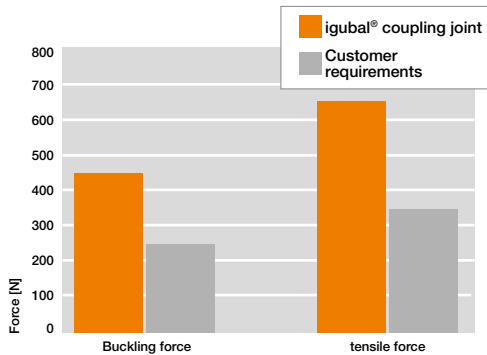
Tech up

- Shore D hardness 58: 25% more elastic than igumid G
- 20 times more abrasion-resistant against metallic ball studs than polyamide
- Very easy to assemble

Cost down

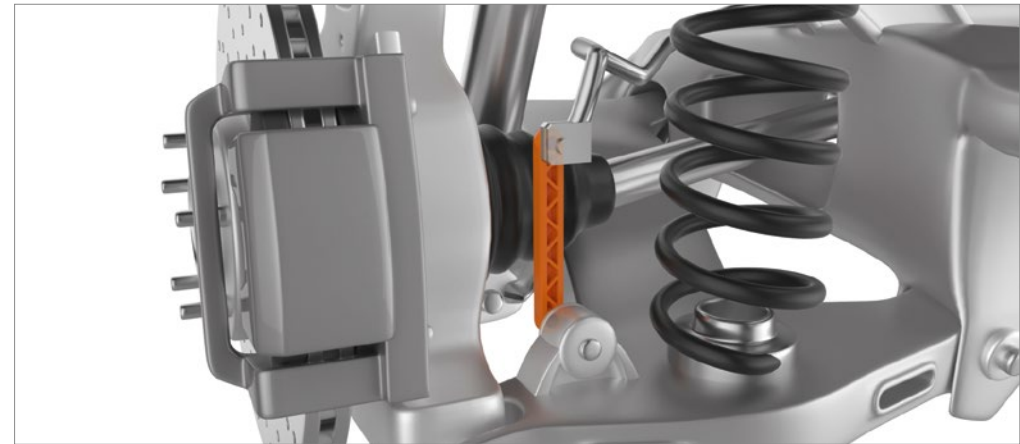
- One-off initial sample set-up costs
- Lifelong tool guarantee

Proof

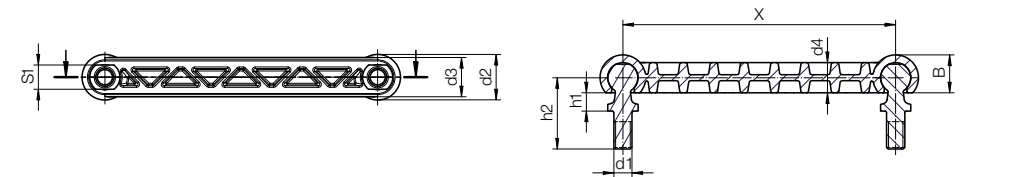


Sustainability

- No lubrication necessary
- Less energy consumption through lower weight
- Can be recycled
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil



Coupling joint in use in a car front axle



Dimensions [mm]

Part No.	d1	d2	d3	d4	h1	h2	X	B	S1
GPZM-06-90-283	M6	12.5	13	10	6	23.6	90	12.5	7.5

Available upon request



... easy assembly ...

... removable angled joints ... WGRM-xx-DE ...

Tech up

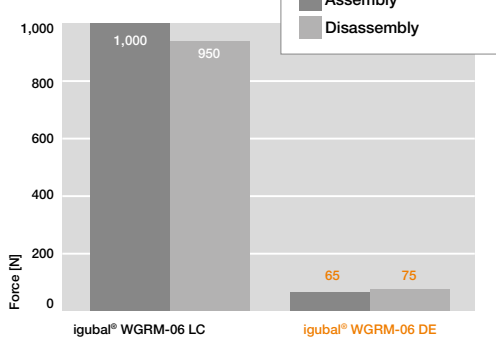
- Reduce weight by up to 40% compared to metallic angled ball and socket joints
- Low assembly and disassembly forces

Cost down

- Cost-effective with injection moulded plastic parts
- Easy assembly and disassembly

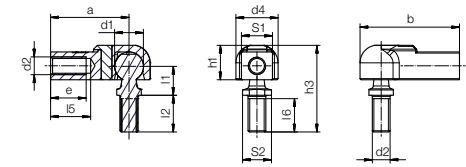
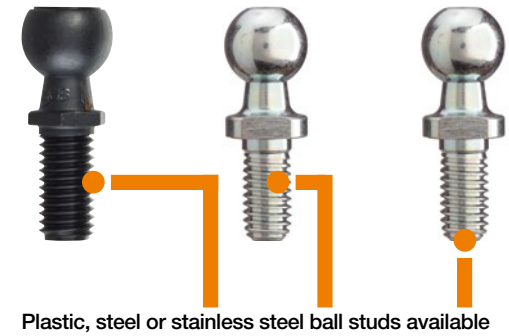
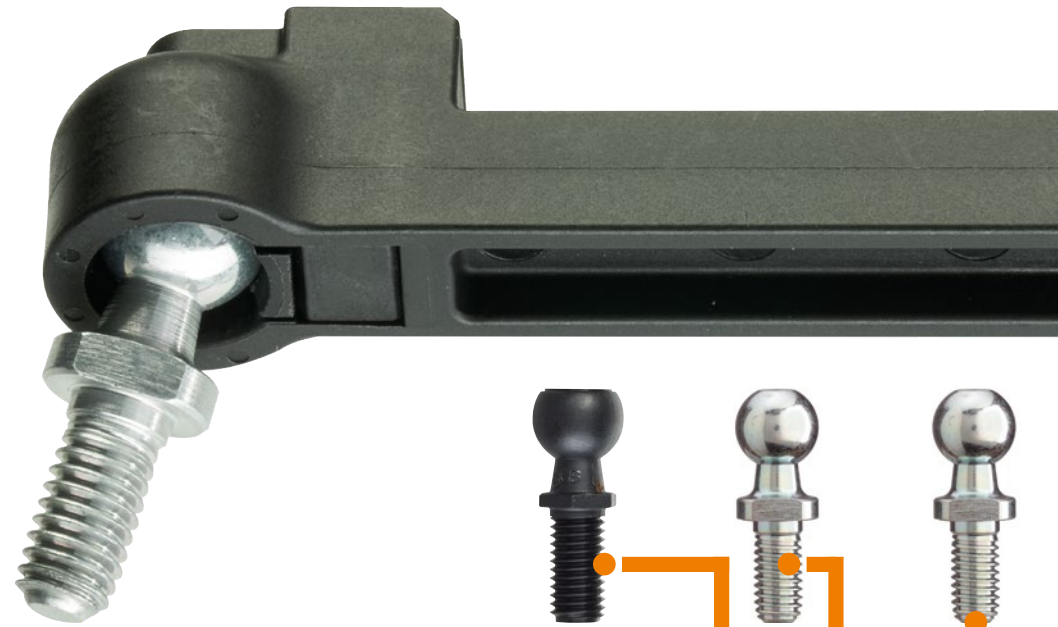
Proof

- Low assembly force



Sustainability

- Material can be recycled
- No lubrication necessary
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil



Dimensions [mm]

Part No.	d2	e	l5	l2	l1	a	d1	h1	d4	S1	h3	l6	S2	b
		±1.0	Min.	±0.5	±0.2	±0.3	±0.1	±0.4	±0.5		±0.5	Min.		±0.5
WGRM-05-DE	M5	11	13	10.2	9	25	8	10.8	12.8	SW9	25.6	8.2	SW7	31.4
WGRM-06-DE	M6	12	14.5	12.5	11	30	10	13	16	SW11	32	10.5	SW8	38
WGRM-08-DE	M8	16	18	16.5	13	35.3	13	15.75	19	SW14	39	15	SW11	44.8
WGRM-10-DE	M10	18	20	20	16	42	16	19	23	SW17	47.25	16	SW13	53.5

□ = Optional right-hand (WGRM) or left-hand thread in housing (WGLM)

📦 Available from stock

New

... more cost-effective ... save costs thanks to spherical cap for control arm made of iglidur® J: JPM-40 ...



Tech up

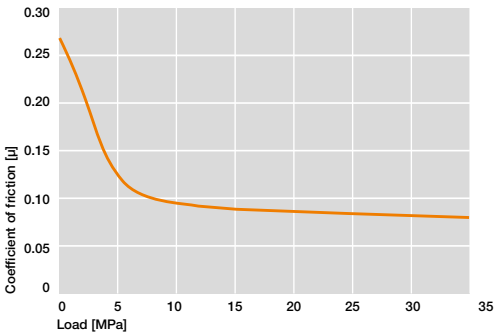
- Higher load capacity with metallic housing: ten times that of plastic housings
- Very easy to assemble
- 40mm diameter from stock
- Longer service life due to permanent self-lubrication

Cost down

- No lubrication of the joints necessary
- No tool costs for igus® standard dimensions

Proof

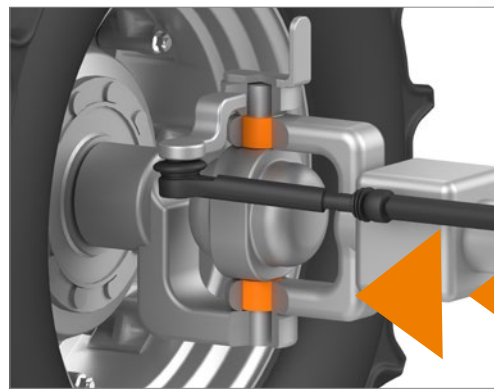
- Coefficient of friction $\nu = 0.01\text{m/s}$



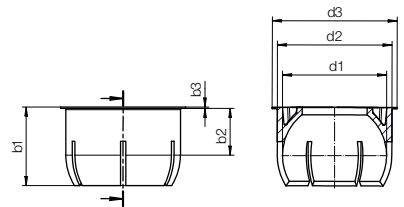
Sustainability

- Savings of approx. 10g lubricant per joint
- Can be recycled
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

... more cost-effective ...
 iglidur® J: JPM-40 ...



Higher load capacity without lubrication thanks to spherical cap made of iglidur® J in a metal control arm



Dimensions [mm]

Part No.	d1	d2	d3	b1	b2	b3
JPM-40	40.05	44.05	48	30.1	18	0.5

Available from stock



...strong for square

... solar pillow block bearing for square tubes ...

Tech up

- Absorption of high static (wind) loads > 50kN
- Angular compensation with spherical bearing (up to 9°)

Proof

- Guaranteed service life of 25 years (72 years almost wear-free, simulated in the igus® laboratory at 1.5 tons)
- Static radial load:
at 0° angular compensation = 50kN
at 9° angular compensation = 25kN

Cost down

- Lubrication-free, therefore no maintenance required
- Simple and quick assembly

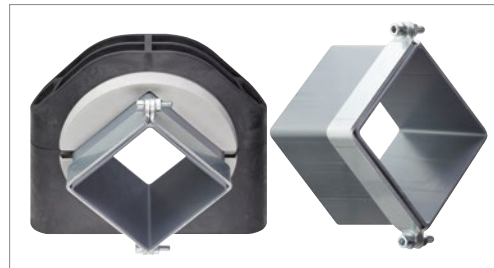
Sustainability

- No environmental pollution from lubricants
- Energy-efficient production because construction is entirely made of injection-moulded polymer parts
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:
www.igus.eu/plastic2oil

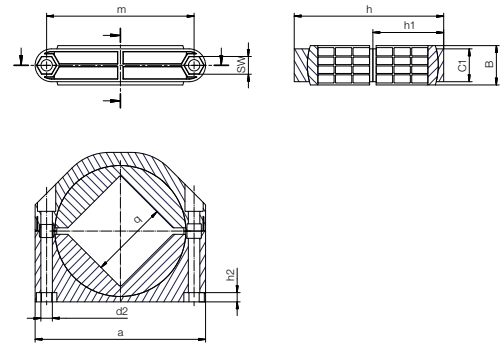


profile...

... igubal® ESQM-100 ...



Matching - collars (galvanised steel)



Dimensions [mm]

Part No.	q	SW	d2	h	h1	h2	a	m	B	C1	Weight [g]
ESQM-100	100.5	24	17.5	228	108	13.6	260	225	60	50	1,295
ESQM-110	110.5	24	17.5	228	108	13.6	260	225	60	50	1,255
ESQM-120	120	24	17.5	228	108	13.6	260	225	60	50	1,210

Available from stock

New

... even more cost-effective ...

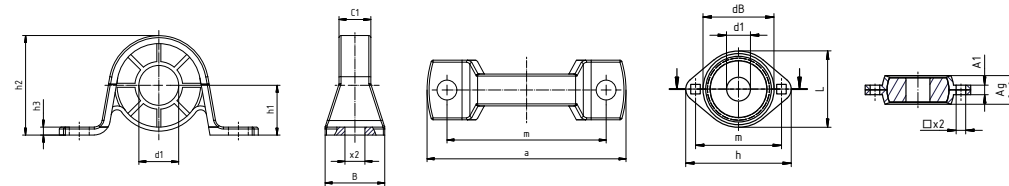
... cost-effective, fast assembly ... Interchangeable low-cost spherical balls made of iglidur® J4

Tech up

- Absolutely dirt and media-resistant
- No lubricants to washout
- Up to 50% lighter than using metal ball bearings

Cost down

- No costs for maintenance/lubrication
- With J4 spherical ball up to 25% more cost-effective than with iglidur® J spherical ball



Dimensions interchangeable spherical ball [mm]

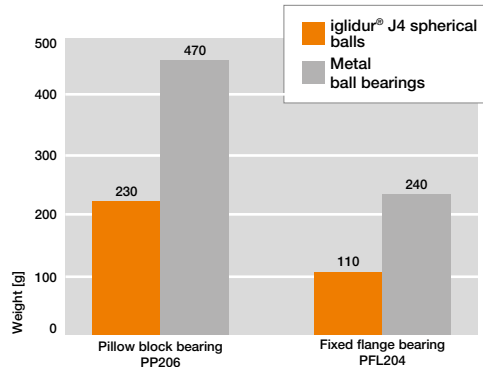
Part No.	Housing No.	d1 E10	dk	B	Compressive force [kN] radial
J4EM-20-14-SP	P204	20	47	14	7.0
J4EM-25-15-SP	P205	25	52	15	8.0
J4EM-30-16-SP	P206	30	62	16	13.0

Housing dimensions [mm]

Part No.	d1	h	L	m	a1 +0.1	Ag	x2		
Fixed flange bearing	E10								
PFL204-J4EM-20-14-SP	20	90	67	71.5	4	16	9		
PFL205-J4EM-25-15-SP	25	95	71	76	4	18	9		
PFL206-J4EM-30-16-SP	30	113	82	90.5	5	19	11		
Part No.	d1	h1	h2	h3	a	m	C1	B	x2
Pillow block bearing	E10								
PP204-J4EM-20-14-SP	20	25.4	50.5	3	98	76	22	32	9.5
PP205-J4EM-25-15-SP	25	28.6	56.6	4	108	86	24.0	32	11.5
PP206-J4EM-30-16-SP	30	33.3	66.3	4	117	95	26.5	38	11.5

Available from stock

Proof



Sustainability

- No lubrication necessary
- Low energy consumption during production of the polymer spherical balls
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

New

... dust and dirt-resistant ...

... solid steel housing with maintenance-free iglidur® J

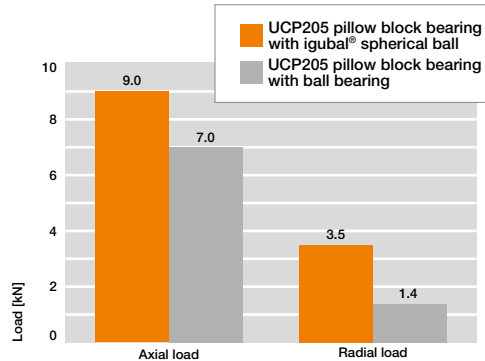
Tech up

- Service life in dirty environment longer than with ball bearings by up to a factor of 8
- For higher static loads

Cost down

- No costs due to maintenance or failure times (e.g. due to lack of lubrication)
- Save up 25% thanks to easy bearing replacement

Proof



Sustainability

- No lubrication necessary
- Spherical balls can be recycled
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

sustainable ...

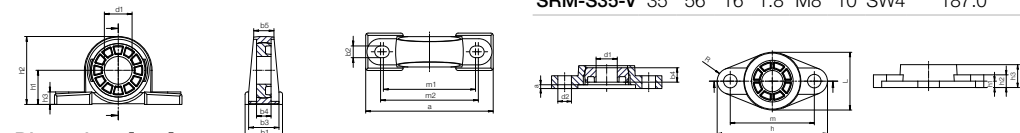
polymer spherical ball ... igugal® JEM-SP ...



Polymer spherical balls instead of metal ball bearings. Increase runtime through the use of cost-effective igugal® interchangeable spherical balls - here in a brick plant.

Dimensions of set collars [mm]

Part No.	d1	d2	B	f	d3	l1	S1	Weight [g]
SRM-S20-V	20	32	14	1.4	M6	6	SW3	53.0
SRM-S25-V	25	40	16	1.6	M8	8	SW4	95.6
SRM-S30-V	30	45	16	1.6	M8	8	SW4	111.0
SRM-S35-V	35	56	16	1.8	M8	10	SW4	187.0



Dimensions [mm]

Part No.	d1	b1	b2	b3	b4	b5	h1	a	h2	h3	m1	m2
Pillow block bearing												
P204-JEM-20-17-SP	20	38	13	30,875	17	22,716	33.3	127	65	14	89	101
P205-JEM-25-17-SP	25	38	13	30,875	17	23,257	36.5	140	71	15	99	111
P206-JEM-30-19-SP	30	48	17	39,000	19	25,278	42.9	165	83	17	117	125
Fixed flange bearing												
FL204-JEM-20-17-SP	20	90	12	60	113	6	12	25.5	11.5	3.6	17	-
FL205-JEM-25-17-SP	25	99	16	68	130	7.5	15	25.5	15.5	4.5	17	-
FL206-JEM-30-19-SP	30	117	16	80	148	7	14	31	15.5	4.2	19	-

Available from stock - Other sizes of interchangeable spherical balls including bearings and set collars upon request

new



100

Easy labelling with the black guide roller

100 highlight 2020



Easy labelling with the black guide roller



102

Ideal for the lubrication-free and electrostatically dissipative transport of delicate goods



104

xiros® self-aligning ball bearing according to DIN 630 compensates for alignment errors



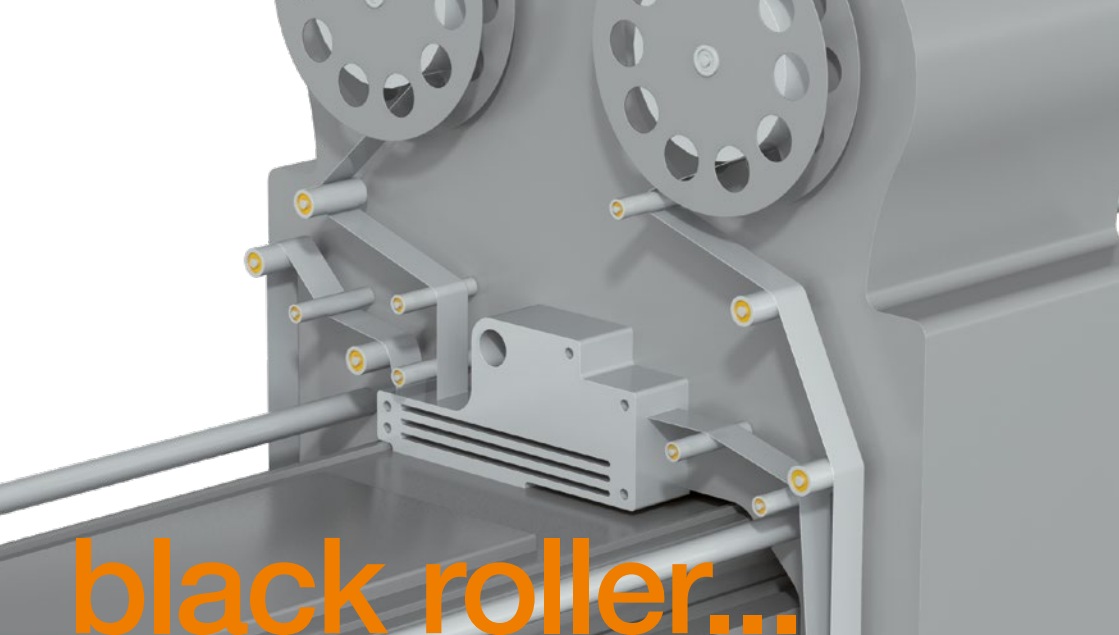
Find product and calculate service life online

Tech up, Cost down. It's our job.

Lubrication-free made easy ...

new... xiros®

... Polymer ball bearings



... **easy labelling** ...
 ... fully assembled system solution for labelling technology

black roller...
 - black anodised

Tech up

- Up to 48% weight savings
- Up to 42% lower inertia
- Low friction

Cost down

- Ready-to-install system eliminates expensive in-house production
- Variable roller lengths, easily produced

Proof

- Guide rollers have been successfully in operation (labeller at KRONES) for years



Sustainability

- No lubrication necessary, so no environmental pollution

www.igus.eu/info/sustainability



Sustainability at igus®
 When we developed the first high-performance plastics for movement, the topic environmental protection was already not our main focus. We wanted to develop products that drive our clients' manufacturing. They should improve technology and reduce costs. One of the beginning recycling was already an important topic but now we reuse 99% of plastic waste by processing it to make granulate material and feeding this material back into the production process.
 Today we know that products that last longer and do not require lubrication contribute to preserving our environment. No lubricants means less environmental pollution. Less abrasion means less pollution with scrapmetal. Less weight means less energy required for movement.
 As producer of special plastics, we have clients in industry and in the sensitive area of medicine. We are aware of our responsibility and the possibilities, which plastic offers in many areas compared to steel. And we continue to research into new materials and products. For our clients and for our environment.

Outer diameter (Ø2)* 38 mm
 Inner diameter (Ø1)* 10 mm
 Length (Ø)* 1200 mm

Compressive strength and fill weight
 Force* 5 N
 Speed 1/min

Force applied
 Surface load Point load

Looping
 No looping 90° looping 180° looping

Environmental parameters
 Min. temperature °C
 Max. temperature °C

Result
 For your application there are in total of 3 suitable parts. Select your desired part to put it in the shopping cart or to call us for further information.

Material	Ø1 (mm)	Weight (kg)	Individual price	Delivery time
Aluminium	8	0.45	30.10 EUR	
Carbon fibre	8	0.06	100.00 EUR	
PVC	8.1	0.03	42.28 EUR	

Your selection
 Part number: BBT-PVC16-6000-S180-10-ES
 Length: 180 mm
 Material: PVC
 Ø1: 8.1 mm
 Weight: 0.03 kg
 Outer diameter: 38 mm
 Inner diameter: 10 mm

42.28 EUR
 42.28 EUR/Piece
 Quantity: 1
 Add to shopping cart

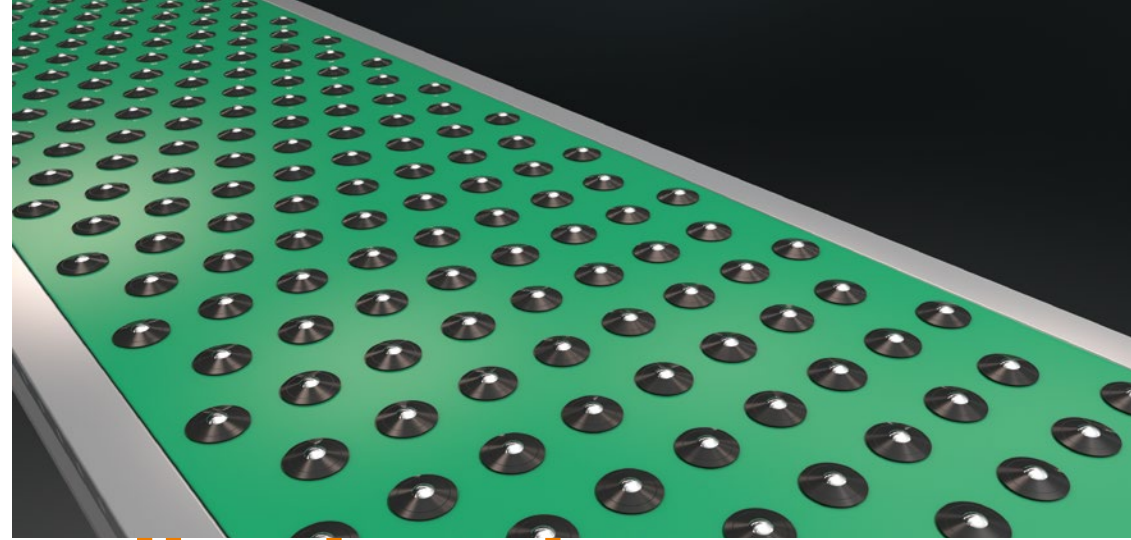
Find the suitable guide roller for every application quickly and easily with the xiros® expert system. Calculate now the expected deflection as well as the weight. www.igus.eu/guide-roller-expert

Complete dimensional range available online
 Order example: **BBT-ACS30-6000-S180-10-ES, L=200mm**



... electrostatically ...

... ideal for the lubrication-free and electrostatically dis



dissipative ...

dissipative transport of delicate goods ...

Tech up

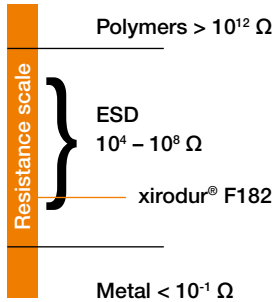
- Electrostatically dissipative
- Inverted installation possible
- Corrosion-resistant

Cost down

- Up to 29% more cost-efficient than its counterpart made of metal

Proof

- Tested service life and conductivity



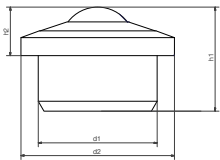
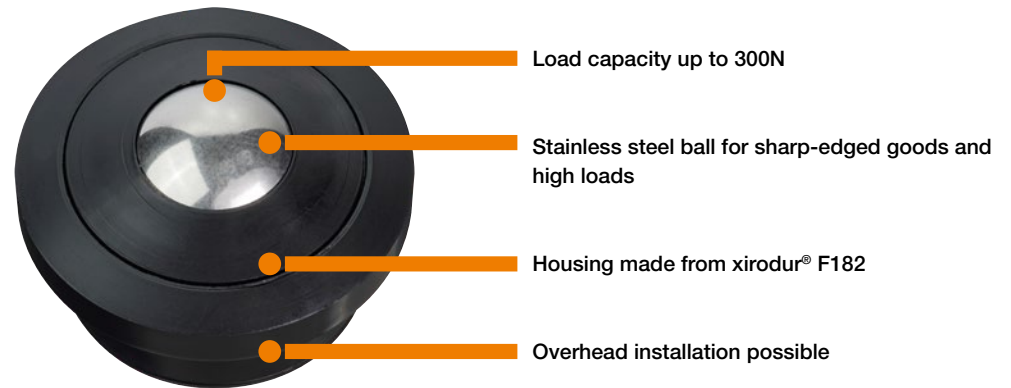
Sustainability

- No lubrication necessary, so no environmental pollution

www.igus.eu/info/sustainability



Sustainability at igus®
 When we developed the first high-performance plastics for movement, the topic environmental protection was already not our main focus. We wanted to develop products that drive our clients' manufacturing. They should improve technology and reduce costs. One of the beginning, recycling was already an important topic but we now reuse 99% of plastic waste by processing it to make granulate material and feeding this material back into the production process.
 Today we know that products that last longer and do not require lubrication contribute to preserving our environment. No lubricants means less environmental pollution. Less abrasion means less pollution with scrapmetal. Less weight means less energy required for movement.
 As producer of special plastics, we have clients in industry and in the sensitive area of medicine. We are aware of our responsibility and the possibilities, which plastic offers in many areas compared to steel. And we continue to research into new materials and products. For our clients and for our environment.



Dimensions [mm]

Part No.	Inner Ø	Outer Ø	Height		Dyn. load capacity axial [N]	Weight [g]
	d1	d2	h1	h2		
BB-515B-F182-ES	24	31	21	9.8	300	22.8

Available from stock

... compensates for alignment errors ...

... xiros® self-aligning ball bearing in accordance with DIN 630 made of the high-performance polymer xirodur® B180 ...

Tech up

- Lubrication-free
- Material with FDA approval
- Corrosion-resistant

Cost down

- Up to 20% more cost-effective than its stainless steel counterpart

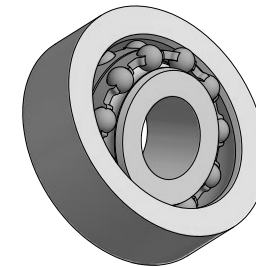
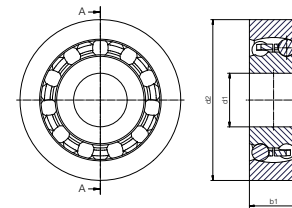
Proof

- Data on wear tested in the igus® test laboratory for the service life calculation
- www.igus.eu/xiros-expert



Sustainability

- No lubrication necessary, so no environmental pollution
- www.igus.eu/info/sustainability



Compensation of misalignment errors

Technical data

Part No.	Max. pivot angle	Permissible radial load [N]	Max. speed	Weight [g]
	[°]		[rpm]	
BB-108-B180-30-ES-D	3.99°	90	2,250	3.6
BB-1200-B180-30-ES-D	3.90°	150	1,800	8.9
BB-1201-B180-30-ES-D	3.92°	150	1,800	10.4
BB-1204-B180-30-ES-D	3.31°	290	1,150	28.8

Dimensions [mm]

Part No.	Inner Ø	Outer Ø	Width
	d1	d2	b1
BB-108-B180-30-ES-D	8	22	7
BB-1200-B180-30-ES-D	10	30	9
BB-1201-B180-30-ES-D	12	31	10
BB-1204-B180-30-ES-D	20	47	14

Available from stock

new



122 highlight 2020



drylin® NTP - complete telescopic guide made of iglidur® polymer material

Tech up, Cost down. It's our job.

new



108

Corrosion-resistant drylin® W clear anodised rails with round geometry for the modular linear system



110

Intuitive positioning with the drylin® W linear carriage with integrated spring latching system



112

Optimised roller orientation and integrated ball bearings for smoother operation of drylin® WJRM



114

Predictive maintenance: drylin® linear carriage with wear display via LED or with wireless transmission



116

drylin® linear system with linear carriage and integrated PRT slewing ring from igus®



118

Low-profile, light and durable drylin® N linear carriage made of iglidur® polymer material



120

drylin® N linear carriage with defined pretension



122

drylin® NTP – complete telescopic guide made of iglidur® polymer material



124

Linear housings made of robust lightweight igus® polymers

Lubrication-free made easy ...

drylin

... Linear technology

New

Econ

... save and design

... round drylin® W profile made of aluminium with clear

Tech up

- Clear anodised rails with round geometry (size 10, 16, 20) for the modular linear system
- Corrosion-free clear anodised surface finish
- Consistent silver colour; ideal for decorative visible parts
- High flexibility in construction due to single and double shafts
- Clearance reduction due to bearings
WJ200UME-01-10/16/20
- Rattle-free through pre-loaded bearings
WJ200UM-01-10/16/20-Pxx

Proof

- Service life of drylin® W can be calculated online
www.igus.eu/drylinW
- Clear anodised corrosion protection tested for use by means of an NSS salt spray test according to DIN EN 9227/ASTM B-117, no change to the profile
- Coefficient of friction and wear tested in the igus® laboratory

Cost down

- 15% more cost-effective than the hard-anodised version
- All profiles available from stock
- Saw cuttings to the millimetre

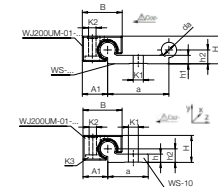
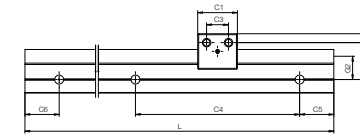
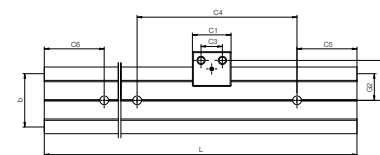
Sustainability

- 66% weight saving due to use of aluminium instead of steel
- Reduced inertia
- Lubrication-free use also in emission-critical environments
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:
www.igus.eu/plastic2oil

... anodised coating now available ... drylin® CA



Product range of suitable drylin® pillow blocks available online



Dimensions [mm]

Part No.	Weight [kg/m]	H ±0.25	da -0.15	di max. ±0.6	L max. ±0.6	a	A1	b	h	h1	h2	G1	G2	a1	Q1	Q2
WS-10-CA	0.62	18	10	-	4.000	27	16.5	-	5.5	5.5	9	27	17	-	-	-
WS-16-CA	0.98	27	16	8.0	4.000	27	25.0	-	7.5	3.5	14	33	19	-	32	28
WS-20-CA	1.32	36	20	10.2	4.000	27	30.0	-	9.5	4.5	20	38	21	-	37	37
WS-10-30-CA	0.85	18	10	-	4.000	30-0.5	16.5	30	5.5	5.5	9	25	15	-	-	-
WS-10-40-CA	1.00	18	10	-	4.000	40-0.5	16.5	40	5.5	5.5	9	30	20	-	-	-
WS-10-80-CA	1.50	18	10	-	4.000	74-0.7	16.5	74	5.5	5.5	9	27	17	40	-	-
WS-10-120-CA	2.02	18	10	-	4.000	120	16.5	120	5.5	5.5	9	30	20	80	-	-
WS-16-60-CA	1.96	27	16	8.0	4.000	54-0.5	25.0	58	7.5	3.5	14	43	29	-	32	28
WS-20-80-CA	3.30	36	20	10.2	4.000	74-0.7	30.0	82	9.5	4.5	20	38	21	40	37	37

Available from stock

New

... definitive position

... the drylin® W locking and positioning carriage can be mov

ning ...

ed manually from one defined position to the next ...

Tech up

- Linear carriage with integrated spring latching system
- Robust stainless steel ball
- Latching/positioning on standard rails
- Individual latching on profile without holes
- Low-profile design – 16mm

Cost down

- Positioning carriages based on drylin® W compact carriages
- Defined adjustment without measuring scale, ruler or position display
- Use of profiles from the drylin® W linear system

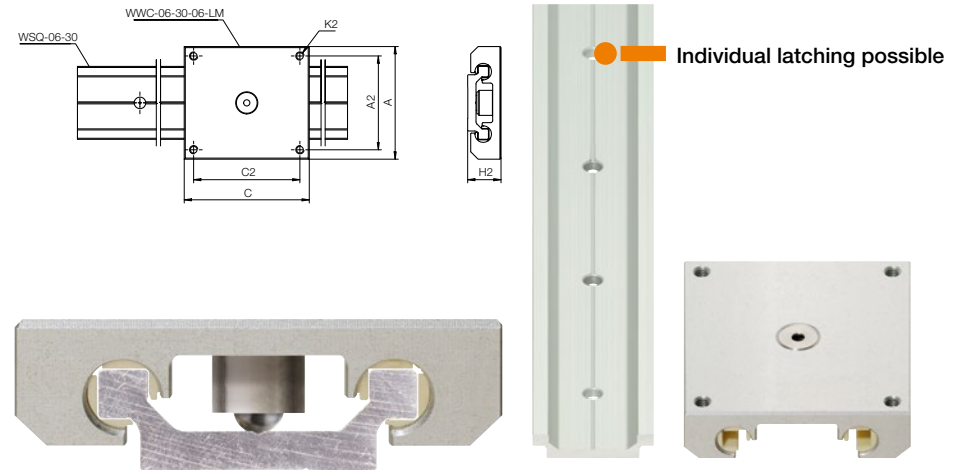
Proof

- Service life of drylin® W non-latching compact carriage can be calculated online
www.igus.eu/drylin-expert
- Up to four times quieter than metal bearings
- Latching principle tested in the igus® laboratory

Sustainability

- Locking without any lubricants
- No contamination when touching textiles, wood, leather, fabrics
- Sliding elements replaceable, all metallic parts reusable
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:

www.igus.eu/plastic2oil



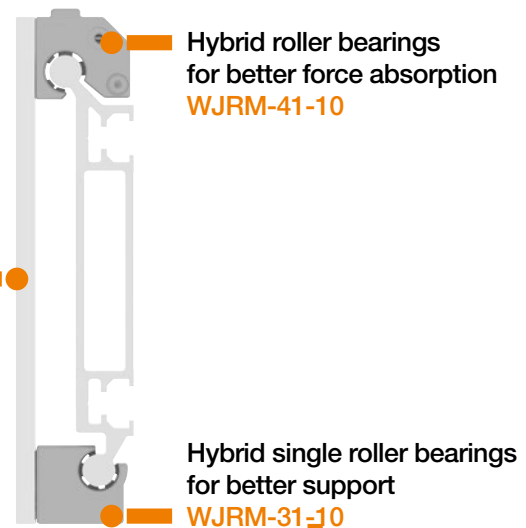
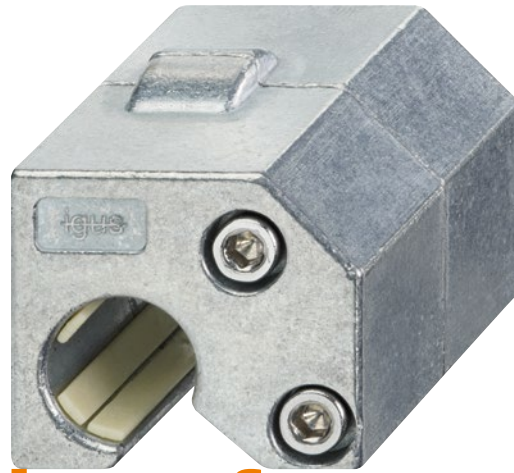
Technical data and dimensions [mm]

Part No.	Weight [kg]	A ±0.25	C -0.1	A2 max.	C2 ±0.6	K2 M4	H2* ±0.2	Stat. load capacity				
								Coy [N]	Coz [N]	Mox [Nm]	Moy [Nm]	Moz [Nm]
WWC-06-30-06-LM	0.07	54	60	45	51	M4	16	1,680	840	25	34	34

Available from stock

WJRM-31-10-BB

WJRM-41-10-BB



Hybrid roller bearings for better force absorption
WJRM-41-10

Matching carriage plate
WWYR-10-120-L-AL

L=10 (100mm) / 15 (150mm) / 20 (200mm)

Hybrid single roller bearings for better support
WJRM-31-10

... lubrication-free s

... optimised roller alignment and integrated ball bearings reduce

smooth operation ...

the coefficient of friction by half ... ideal for manual adjustments ...

Tech up

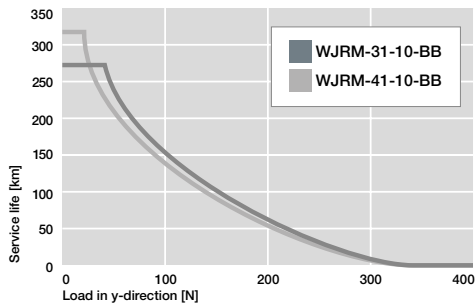
- Hybrid roller bearings with ball bearings for smooth lateral adjustments
- Up to four times quieter than metal bearings
- Low installation height of 30mm on attractive rail profile WSR-10-120
- Optimised roller alignment for maximum force absorption

Cost down

- Cost-effective zinc die-cast housing
- Roller bearings without lubrication
- Can be positioned individually or as a complete carriage with mounting plates in 3 lengths made of the drylin® W modular linear system

Proof

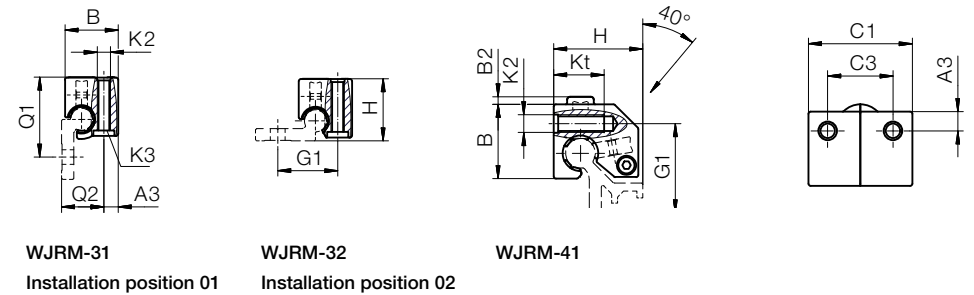
- Service life tested in the igus® laboratory
- Up to 70% easier running



Sustainability

- Easy energy-efficient adjustment
- Clean hybrid roller guide without lubrication
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:

www.igus.eu/plastic2oil



Technical data and dimensions [mm]

Part No.	A3	B	B2	C1	C3	G1	H	Q1	Q2	kt	K2 for threads	K3 for screw
WJRM-31-10-BB	6.5	24	-	35	22	27	28	36	19	-	M6	M5
WJRM-41-10-BB	6.5	25	2.5	35	22	30	30	-	-	16	M6	M5

Part No.	Weight [g]	Static load capacity Co [N]	Dyn. load capacity Cz+			Coefficient of friction in z-direction [μ]	F · v max [N * m/s]
			10km	100km	200km		
WJRM-31-10-BB	85	250	250	90	50	< 0.03	100
WJRM-41-10-BB	91	250 - 350	250 - 350	90 - 125	50 - 70	< 0.03	50

Available from stock

New



condition monitoring

... with the new drylin[®] isense linear carriage, the function

g ... online ... offline

and wear test is carried out simply at the push of a button ...

Tech up

- Linear carriage with function check at the touch of a button or with the monitoring unit
- Wear sensor directly integrated in the liner
- Predictable maintenance signal when the wear limit of 0.5mm is reached
- Suitable for drylin[®] W linear systems and drylin[®] toothed belt axes

Cost down

- Direct use without integration in local IT environment
- Liners for bearing replacement can be ordered as a set
- Quick bearing replacement of drylin[®] W exchange bearings within seconds
- Reduced downtimes since bearings can be changed without dismantling the linear unit

Proof

- Service life and function tested in the igus[®] laboratory; can be calculated online (on ZLW-1040 toothed belt axis, 100N load at a stroke length of 3,000mm, speed of 0.5mm/s and acceleration of 1m/s²)
- www.igus.eu/drylin-expert
- Long-lived batteries (three years)
- Clear indicators: green-> ok, red -> bearing replacement recommended

Sustainability

- Long service life thanks to linear liners made of iglidur[®] J200
- All metallic components can be reused when replacing bearings
- Lubrication and maintenance-free
- igus[®] supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

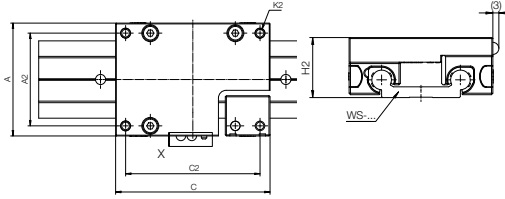
Offline – function check at the touch of a button via LED display

- Pushbutton for status report
- Green LED indicates "OK"
- Red LED indicates necessary replacement

Online – function check wirelessly transmitted to the evaluation unit



Simple bearing liner replacement

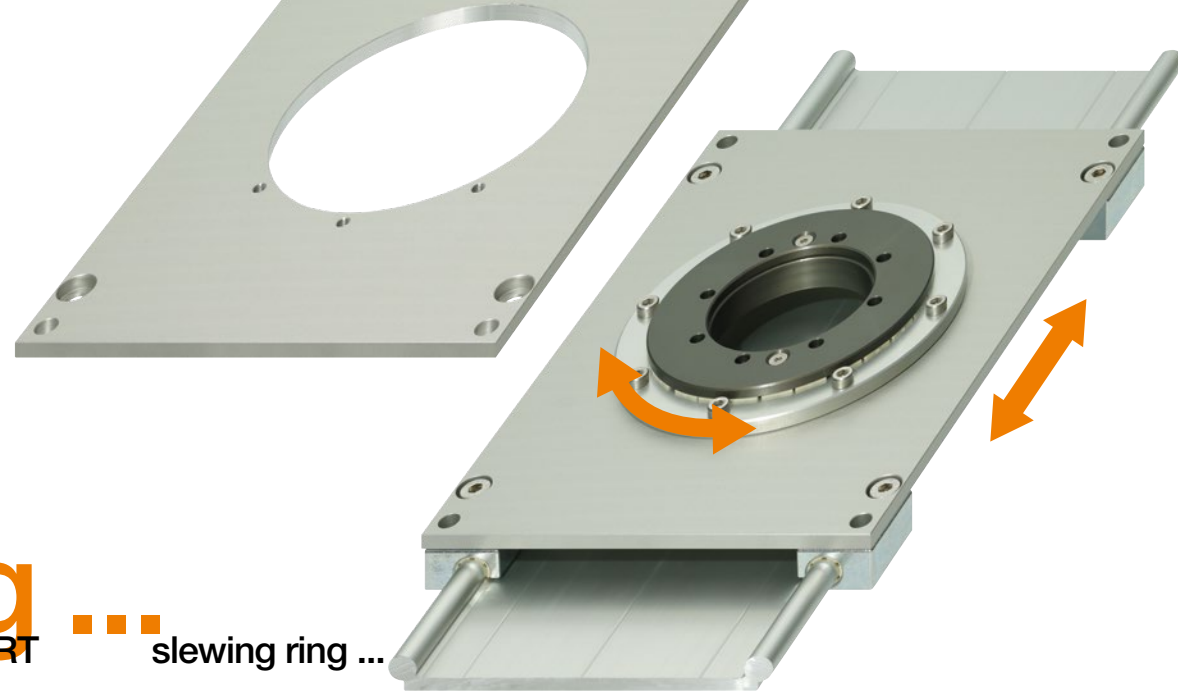
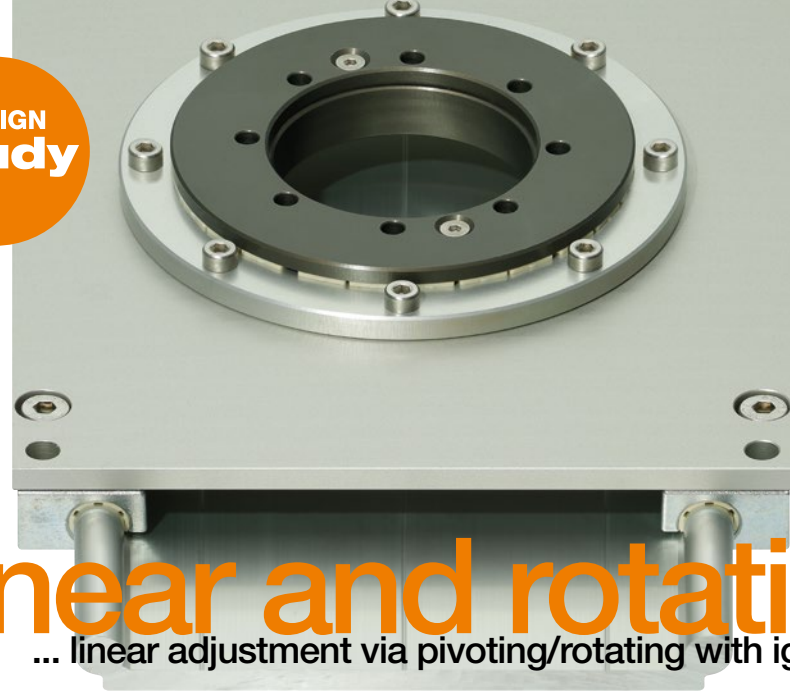


Dimensions [mm]

Part No.	A	C	A2	C2	K2	H2	Weight [kg]
Online – function check wirelessly transmitted to the evaluation unit							
WW-10-40-10-IS	73	100	60	87	M6	30	0,3
WW-16-60-10-IS	104	100	86	82	M8	39	0,5
Offline – function check at the touch of a button via LED display							
WW-10-40-10-IS.LED	73	100	60	87	M6	30	0,3
WW-16-60-10-IS.LED	104	100	86	82	M8	39	0,5

Available starting in June 2020

DESIGN Study



... linear and rotating ...

... linear adjustment via pivoting/rotating with igus® PRT

slewing ring ...

Tech up

- drylin® linear system with integrated slewing ring
- Linear and pivoting movements in a single component
- Linear carriage with other variable bearing functions: clearance adjustment, spring pretension, manual clamp
- Extremely compact PRT-04-50 slewing ring

Cost down

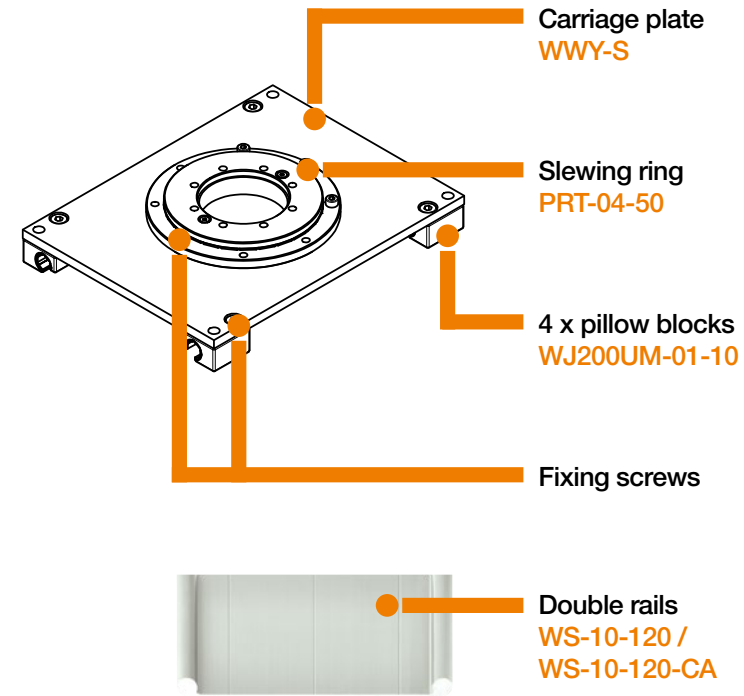
- Two functions in a single carriage
- Complete carriage reduces design effort
- Variable assembly with suitable carriage plate prepared to mount the slewing ring
- Rail profile with high torsional rigidity

Proof

- Tested in the customer's design
- drylin® W linear guide and iglidur® PRT-04-50 service life can be calculated online
www.igus.eu/PRT-expert
www.igus.eu/drylin-expert

Sustainability

- Clean components
- Operation quieter by a factor of up to four thanks to elimination of metal balls
- No hazard of contamination by adjacent substances or components
- Lightweight due to use of aluminium and plastics
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:
www.igus.eu/plastic2oil



Available upon request



9.3mm

... low profile lightw

... linear carriages made of solid plastic ... lightweight with

eight durable ...

low installation height ...

Tech up

- The lowest installation size 40 drylin® N linear system at 9.3mm
- Thread integrated in the linear carriage
- Suitable linear rails in silver and black, with or without holes

Cost down

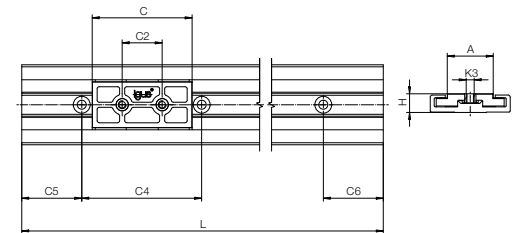
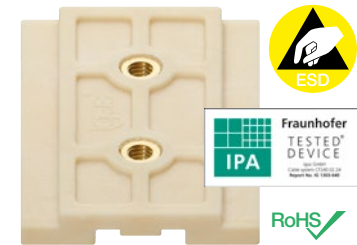
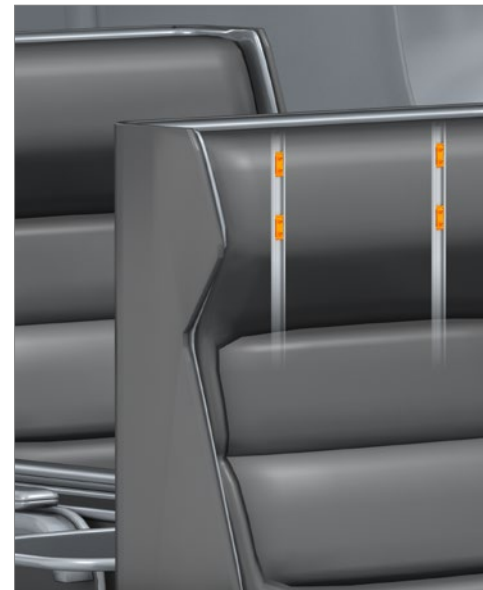
- Cost-effective production in injection moulding
- Quick and easy installation without instructions thanks to fixed and floating bearing carriages
- Storage also possible as bulk material

Proof

- drylin® N predictable online www.igus.eu/drylin-expert
- Reduced space with a system height of 9.3mm
- Save 60% of carriage weight
- Cleanroom tested according to DIN EN ISO 14644-1
- ESD-compatibility tested according to SEMI E78-0998

Sustainability

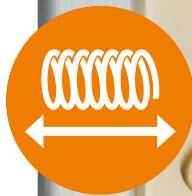
- Very light due to 2/3rd weight saving compared to standard carriages
- Emission reduction and quieter than metallic bearings by a factor of up to four
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil



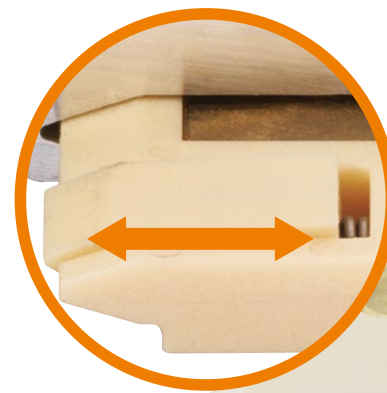
Dimensions [mm]

Part No.	C	C2	H	K3	A	Weight [g]
NW-22-40	50	20	9.3	M4	23	12

Available from stock



precise adjustment
... pre-load prism slides are perfect for precise and controlled



... constant preload.
adjustment ...

Tech up

- Linear carriage with defined pretension
- Constant drive and holding forces
- Carriage stays where it is even more reliably with holding forces of up to 32N

Cost down

- Cost-effective production in injection moulding
- Individual spring pretension suited to the application environment
- Short and long carriages for any installation space
- Variable installation via threaded hole or through hole

Proof

- Average displacement forces and guaranteed holding forces tested in the igus® laboratory
- More than double the drive and holding forces for short and long carriages (P80/P160 compared to P38/P76)
- Suitable corrosion-resistant rail profiles with a anodised coating

Sustainability

- Compact, lightweight design with low inertia
- Dispense with lubrication
- Emission reduction with quiet sliding instead of rolling
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:

www.igus.eu/plastic2oil

NWV-21-27-35-P80
NWV-22-27-35-P80

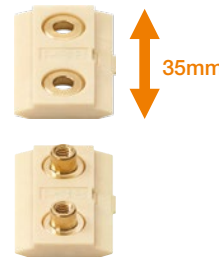
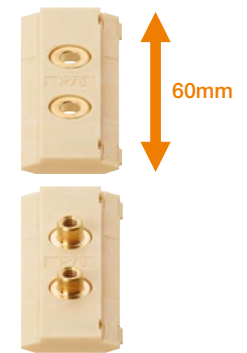


Image exemplary

Average displacement force [N]:	
P05 = 1.0	P10 = 2.0
P11 = 2.2	P22 = 4.4
P23 = 4.6	P46 = 9.2
P38 = 7.6	P76 = 15.2
P80 = 16.0	P160 = 32.0
Guaranteed holding force [N]:	
P05 = 0.5	P10 = 1.0
P11 = 1.1	P22 = 2.2
P23 = 2.3	P46 = 4.6
P38 = 3.8	P76 = 7.6
P80 = 8.0	P160 = 16.0

NWV-21-27-60-P160
NWV-22-27-60-P160

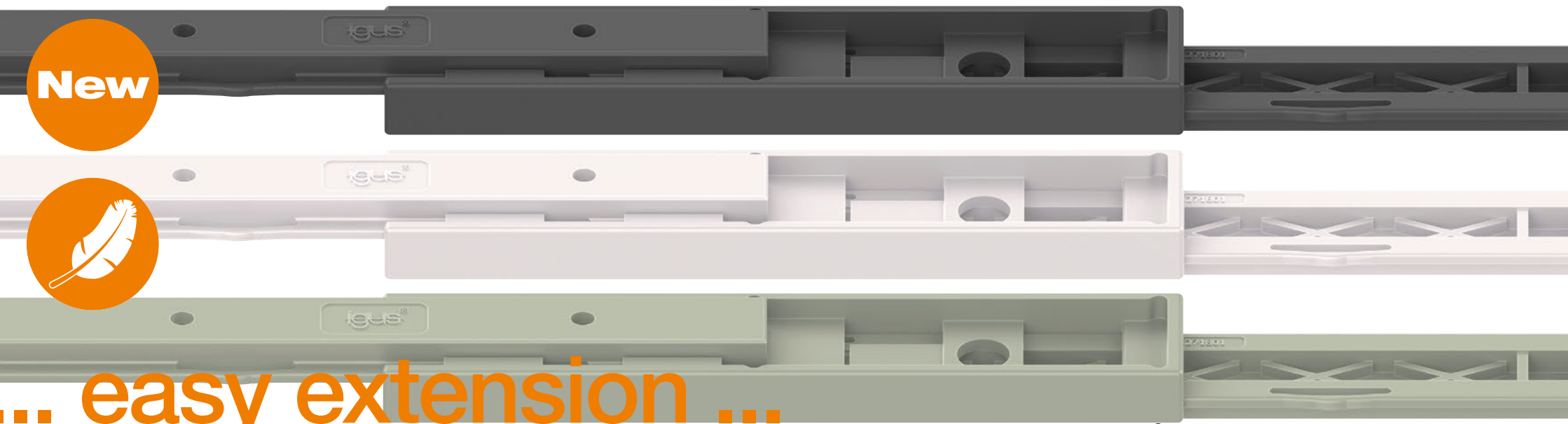


Dimensions [mm]

Part No.	Pre-load	H ±0.35	A	C	C2	H2	K	K3	M* [Nm]	SP	Dp** min.	Weight [g]
NWV-21-27-35-P80	8	9.5	14	35	20	0.7	Ø4.5	-	-	-	-	6
NWV-22-27-35-P80	8	9.5	14	35	20	-	-	M4	1.2	5	6.5	11
NWV-21-27-60-P160	16	9.5	14	60	20	0.7	Ø4.5	-	-	-	-	6
NWV-22-27-60-P160	16	9.5	14	60	20	-	-	M4	1.2	5	6.5	11

Maximum screw tightening torques; ** Minimum hole Ø; Suitable prism rails with clear and black anodising available

Available from stock



... easy extension ...

... telescopic guide made of plastic totally dispenses with

metal components ... drylin® NTP ...

Tech up

- Complete telescopic guide made of solid plastic
- Three-part design made of igus® high-performance polymers
- Quiet operation with no rolling elements
- Low clearance due to spring preload
- Available in 3 colours (anthracite, light grey, white)

Proof

- Easy assembly in seconds
- Maintenance-free through the use of self-lubricating igus® polymers
- 64% weight saving and 23% narrower installation space compared to NT-35
- Tested and proven, bears up to 2.5kg, up to 70% lighter than competing products made of steel

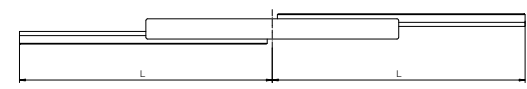
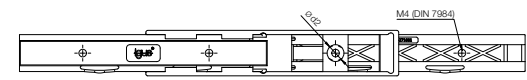
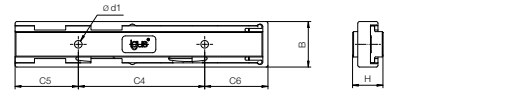
Cost down

- Fast assembly in seconds
- Cost-effective production in injection moulding
- Safe snap-hook principle
- Select from three colours to suit the usage environment

Sustainability

- First metal-free telescopic guide without lubrication
- Low inertia reduces emissions in the aviation industry, among others
- Very easy to transport
- 100% clean and quiet
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:

www.igus.eu/plastic2oil



Dimensions [mm]

Part No.	d	C5	C4	C6	B	H	d2	L
NTP-27-18-150	4,5	37,5	75	37,5	27	18	10	150

Available from stock



Tech up

- Linear housings made of robust lightweight igus® polymers
- Works with all Type O2 liners (compact bearings)
- Linear housings for round shafts made of aluminium, carbon fibre, steel and stainless steel

Proof

- 75% lighter than RJUM-05 series linear housing
- Service life of drylin® R can be calculated online
- 8 times longer service life on steel and stainless steel due to iglidur® E7 linear liner
- Housing with integrated locating spigot and anti-rotation feature of the liners

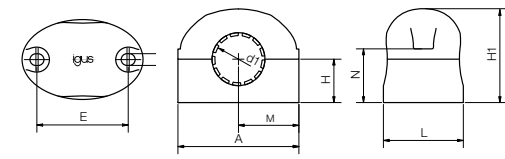
Cost down

- Cost-effective production via injection moulding
- Quick assembly via plug connection
- Separable housing for fast film replacement on the shaft

Sustainability

- High weight saving of up to 75% compared to aluminium housing
- Reusable plastic housing
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

... low cost ... lightweight ... eight ...
 ... cost-effective production via injection moulding, extremely low weight for lightweight constructions, corrosion-free ...



Dimensions [mm]

Part No.	d1	H	H1	A	M	E	S	N	L	Screws
				min.	max.	min.	max.			
ROUMP-05-12	12	15	33	40	20.0	29	4.2	18.5	32	M4
ROUMP-05-16	16	17	36	45	22.5	34	4.2	20.5	35	M4
ROUMP-05-20	20	19	41	53	26.5	40	5.2	23.5	35	M5

Technical data

Part No.	Weight	Tolerance d1	Permissible loads	Max. T*
	[g]		[N]	[Nm]
ROUMP-05-12	20	+0.0 / +0.1	160	0.5
ROUMP-05-16	25	+0.0 / +0.1	240	1.0
ROUMP-05-20	33	+0.1 / +0.2	300	2.0

□ = iglidur® material – available in iglidur® J or iglidur® E7; order example: RE7UMP-05-12

* Recommended fastening screw tightening torque; screw lock recommended

📦 Available from stock

new



128

Four new thread sizes with patented dryspin® high helix thread geometry



132 highlight 2020

dryspin® JGRM in light design optimised for injection moulding



130

Four self-lubricating dryspin® pitches for polymer lead screw nuts



132

dryspin® JGRM in light design optimised for injection moulding



134

Smoother operation & lower vibrations - new dryspin® thread size as an alternative to 10x3 trapezoidal thread



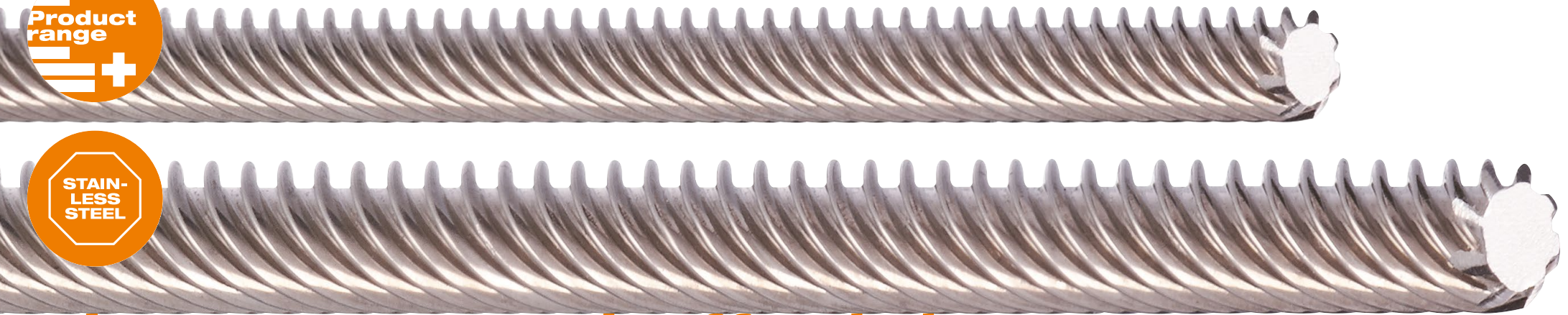
Find product and calculate service life online

Tech up, Cost down. It's our job.

Lubrication-free made easy ...

new... drylin®

... Lead screw technology



... low cost and eff
 ... four new pitch sizes with corresponding high helix lead

icient ...
 screws and high helix lead screw nuts ...

Tech up

- Five new dryspin® lead screws with pitches of 6.35x2.54 LH, 12.7x12.7, 16x10, 20x5
- Quiet due to the rounded tooth geometry
- Up to 30% longer service life thanks to thread symmetry

Cost down

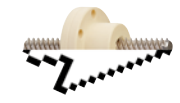
- Online lead screw configuration tool
- Live price display
- Lead screw machining online without CAD knowledge

Proof

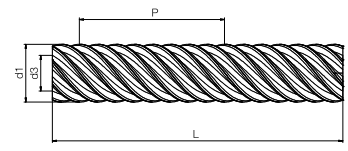
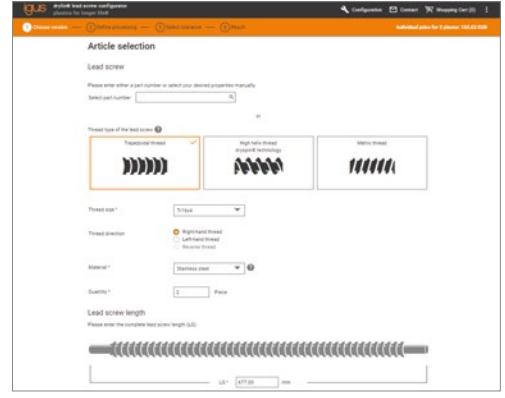
- Service life can be calculated online
- Tested: up to 25% less wear
www.igus.eu/info/linear-guides-test-wear-dryspin
- Corrosion-resistant due to material AISI 304
- Online configuration with plausibility check
- Selection security, 2D PDF and 3D step model included

Sustainability

- Lubrication-free operation
- Easy to clean
- Required length without waste
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:
www.igus.eu/plastic2oil



Configure and order lead screws and machined ends online
www.igus.eu/lead-screw-configurator



Dimensions lead screws [mm]

Part No.	Thread	d1	d3	P	L max.	Weight [kg]	Number of threads	Pitch angle [°]
DST-LS-6.35X2.54-L-Q-ES	DS6.35x2.54	6.35 ^{-0.05}	4.35 ^{-0.05}	2.54	1,000	0.25	2	7.26
DST-LS-12.7X12.7-R-ES	DS12.7x12.7	12.7	9.60	12.7	3,000	0.90	4	17.65
DST-LS-16X10-R-ES	DS16x10	16	11.55	10	3,000	1.59	2	11.25
DST-LS-20X5-R-ES	DS20x5	20	15.60	5	3,000	2.48	1	4.55

Available from stock



... high efficiency ...

... alternative to metallic ball screws ...

self-lubricating ...

Tech up

- Four new dryspin® pitches for plastic lead screw nuts
- Efficiency: up to 82%
- Polymer alternative to metallic ball screws

Proof

- Service life can be calculated online
- Tested: up to 25% less wear
- www.igus.eu/info/linear-guides-test-wear-dryspin
- Lead screw drive service life can be calculated online
- FDA-compliant materials available
- Lead screw nuts and lead screws available in the online shop

Cost down

- Clean and lubrication-free
- No grit adhesion
- Maintenance-free due to self-lubrication

Sustainability

- More than ten lubrication-free and maintenance-free plastics
- No grease or oil in the thread system
- Quiet thanks to rounded edges
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

Dimensions lead screw nuts [mm]

Part No.	Thread d1 x P	d1	d2	d3	d4	d5	b1	b2	A	B	C	SW
Cylindrical lead screw nuts												
DST-□SLM-1413DS6.35X2.54	DS6.35x2.54	6.35	14	-	-	-	13	-	-	-	-	-
DST-JSRM-3632DS16X10	DS16x10	16	36	-	-	-	32	-	-	-	-	-
DST-JSRM-273632DS16X10	DS16x10	16	36	-	-	-	32	-	-	-	-	27
DST-JSRM-4540DS20X5	DS20x5	20	45	-	-	-	40	-	-	-	-	-
DST-JSRM-304540DS20X5	DS20x5	20	45	-	-	-	40	-	-	-	-	30
Lead screw nuts with flange												
DST-□FLM-1315DS6.35X2.54	DS6.35x2.54	6.35	13	25	19	3.2	15	5	-	-	-	-
DST-□FLM-131315DS6.35X2.54	DS6.35x2.54	6.35	13	25	19	3.2	15	5	-	-	-	13
DST-JFRM-2835DS16X10	DS16x10	16	28	48	38	6	35	12	-	-	-	-
DST-JFRM-282835DS16X10	DS16x10	16	28	48	38	6	35	12	-	-	-	28
DST-JFRM-3244DS20X5	DS20x5	20	32	55	45	7	44	12	-	-	-	-
DST-JFRM-323244DS20X5	DS20x5	20	32	55	45	7	44	12	-	-	-	32
Cylindrical injection moulded nuts												
DST-□SLM-C01-DS6.35X2.54	DS6.35x2.54	6.35	12	-	-	-	12	-	11	-	-	-
DST-JSRM-C01-DS16X10	DS16x10	16	28	-	-	-	25	-	25.5	-	-	-
DST-JSRM-C01-DS20X5	DS20x5	20	32	-	-	-	25	-	26.2	-	-	-
Injection moulded nuts with flange												
DST-□FLM-C01-DS6.35X2.54	DS6.35x2.54	6.35	12	-	-	3.2	12	4	11	18	18	-
DST-JFRM-C01-DS16X10	DS16x10	16	28	-	-	6	25	6.5	25.5	27	34	-
DST-JFRM-C01-DS20X5	DS20x5	20	32	-	-	6	25	8.0	29.0	30	42	-

□ = Information about other materials and dimensions available online – www.igus.eu/lead-screw-technology

Available from stock

New



Screw-in channel for M6 cap head screw

Thread centring spigot

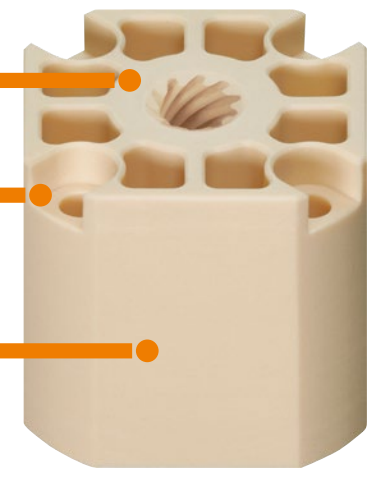
Counterbore for screw head

Simple, straight fixing with indentation on the screw-in channel

Anti-rotation feature with spanner flat

HD version with ES metal plate (option)

Material: high-performance polymer iglidur® J



robust and with t
... lightweight injection-moulding-optimised design, conn

he same geometry
ection and pitch dimensions identical to conventional ball screw

Tech up

- New lead screw nut design makes it easy to fix securely
- Connection sizes identical to conventional ball screws
- Robust, secure front-side mounting without flange
- Available as heavy-duty version with metal plate for high static axial loads

Cost down

- Cost-effective type, optimised for injection moulding
- Variable design for all thread sizes Ø 14/16 and 18/20
- Alternative to metallic ball screw nuts

Proof

- Easy installation due to thread centring spigot and four M6 socket cap bolts
- Service life can be calculated online
- The heavy-duty version can cope with 30% higher static axial loads than threaded flange nuts with the same threads

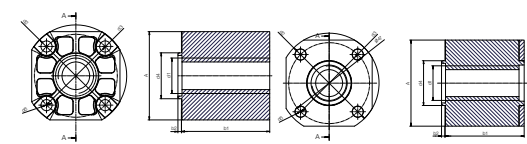
Sustainability

- Lightweight and low inertia thanks to plastic instead of metal
- Noise reduction due to rounded thread flanks
- Lubrication and maintenance-free operation
- Long-lasting use due to patented asymmetry
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

Dimensions [mm]

Part No.	Thread	d1	d2	d3	d4	d5	b1		b2	A□	Max. stat. load axial [N]	
							□ C-01	□ HD-02			□ C-01	□ HD-02
DST-JGRM-□-DS14X25	DS14x25	14	48	38	20	5.3	45	42	2	40	2,936	4,110
DST-JGRM-□-DS14X30	DS14x30	14	48	38	20	5.3	45	42	2	40	2,936	4,110
DST-JGRM-□-DS14X70	DS14x70	14	48	38	20	5.3	45	42	2	40	1,567	2,194
DST-JGRM-□-DS16X10	DS16x10	16	48	38	20	5.3	45	42	2	40	3,466	4,853
DST-JGRM-□-DS16X35	DS16x35	16	48	38	20	5.3	45	42	2	40	3,434	4,807
DST-JGRM-□-DS18X24	DS18x24	18	58	47	26	6.3	50	46	2	50	4,716	6,508
DST-JGRM-□-DS18X40	DS18x40	18	58	47	26	6.3	50	46	2	50	4,368	6,028
DST-JGRM-□-DS18X80	DS18x80	18	58	47	26	6.3	50	46	2	50	3,016	4,162
DST-JGRM-□-DS18X100	DS18x100	18	58	47	26	6.3	50	46	2	50	2,646	3,652
DST-JGRM-□-DS20X20	DS20x20	20	58	47	26	6.3	50	46	2	50	4,921	6,791
DST-JGRM-□-DS20X50	DS20x50	20	58	47	26	6.3	50	46	2	50	4,031	5,562
DST-JGRM-□-DS20X60	DS20x60	20	58	47	26	6.3	50	46	2	50	3,313	4,572
DST-JGRM-□-DS20X80	DS20x80	20	58	47	26	6.3	50	46	2	50	3,408	4,703
DST-JGRM-□-DS20X90	DS20x90	20	58	47	26	6.3	50	46	2	50	3,313	4,572

□ = C-01/HD-02 | Order example: DST-JGRM-C-01-DS14x25: C-01 lead screw nut made of iglidur® J, with 14x25 right-hand thread



Available from stock

Design C-01

Design HD-02



quieter operation ... less vibration ...

... quiet alternative to conventional 10x3 trapezoidal threads ...

Tech up

- New dryspin® thread size as an alternative to 10x3 trapezoidal thread
- Less noise during operation at high speeds
- Eliminate noise and vibration
- Lead screw nut in cylindrical design or with flange
- Corrosion-resistant lead screw made from material AISI 304

Proof

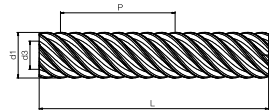
- Service life can be calculated online
 - High lead screw corrosion resistance thanks to the AISI 304 material
 - Noise reduction due to rounded thread angles
 - Tested: up to 25% longer service life and 25% less wear
- www.igus.eu/info/linear-guides-test-wear-dryspin

Cost down

- Injection moulding production is cost effective
- Maintenance-free and lubrication-free lead screw nuts made of igus® high-performance polymers
- Robust use, even with dirt and dust
- Easy to clean

Sustainability

- Emission reduction through quiet operation
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil



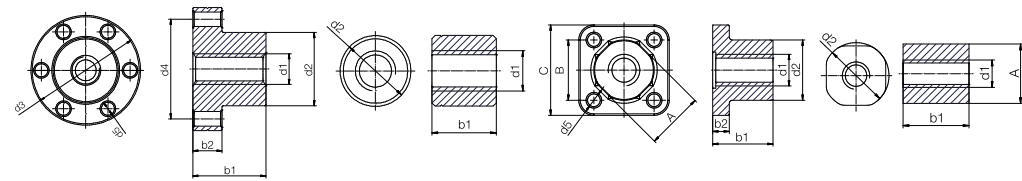
Dimensions lead screw [mm]

Part No.	Thread	d1	d3	P	L max.	Weight [kg]	Number of threads	Pitch angle
DST-LS-10X3-R-ES	DS10x3	10	7.85	3	3.000	0.62	2	5.45

Dimensions lead screw nuts [mm]

Part No.	Thread	d1	d2	d3	d4	d5	b1	b2	A	B	C
Cylindrical lead screw nuts											
DST-□SRM-2220DS10X3		DS10x3	10	22	-	-	20	-	-	-	-
Lead screw nuts with flange											
DST-□FRM-2525DS10X3	DS10x3	10	25	42	34	5	25	10	-	-	-
Cylindrical injection moulded nuts											
DST-JSRM-C-01-DS10X3	DS10x3	10	20	-	-	-	20	-	18	-	-
Injection moulded nuts with flange											
DST-JFRM-C-01-DS10X3	DS10x3	10	20	-	-	4.2	20	5.5	19	20	30

□ = More iglidur® materials upon request



Available from stock

new



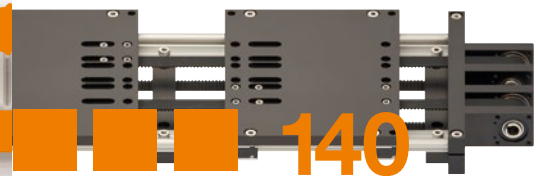
138

Low-profile, strong, durable - flat stainless steel toothed belt axis for drylin® E

138 highlight 2020



Low-profile, strong, durable - flat stainless steel toothed belt axis for drylin® E



140

Toothed belt axis with double toothed belt based on drylin® W linear guide system with separate control



142

New gearbox with higher torque for up to 44Nm continuously



144

Complete package for a variety of automation tasks without programming



146

Configure a complete system with motor and control system online



Find product and calculate service life online

Tech up, Cost down. It's our job.

Lubrication-free made easy ...

new... drylin®

... Drive technology



... compact-design ... strong ... resistant ...

... driven by a toothed belt and ready to connect to drylin® E stepper or DC motors ... drylin® ZLW ...

Tech up

- Toothed belt axis made of stainless steel
- High corrosion resistance due to parts made from 1.4301 (AISI 304) and 1.4571 (AISI 316Ti)
- Variable stroke lengths of up to 2,000mm
- Modular system for various system widths
- Transparent design for easy cleaning

Proof

- Service life can be calculated online
- Wide design for full stability
- Dimensioning aids for motor selection
- Tested in the igus® laboratory: ZLW series Size 20 modular axis, 1,000,000 cycles, in combination with servo motor and gearbox at 1,000N of load, 2,500mm stroke, and a speed of 1m/s

Cost down

- Variable width, stroke length, and carriage length allows adjustment to any application
- Adjustment of toothed belt tension directly on the carriage
- Linear guide from the drylin® W linear construction kit
- Delivered ready to connect with motor and motor control system

Sustainability

- 100% clean operation
- No need to wash out grease and oil in the cleaning process
- Lubrication and maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:

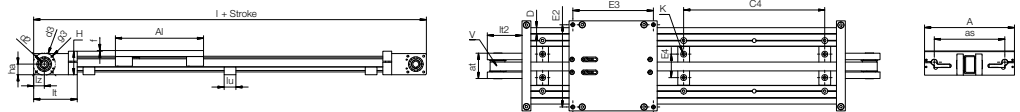
www.igus.eu/plastic2oil

Technical data and dimensions [mm]

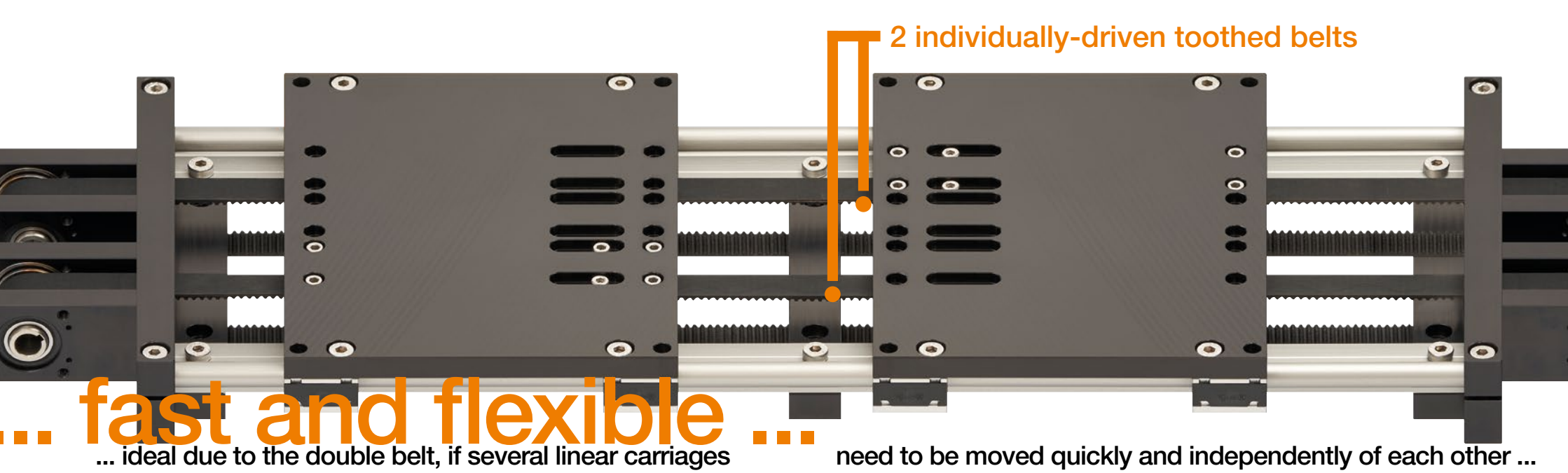
Part No.	Max. stroke length	Transmission [mm/rev]	Tooth profile	Drive belt material	tension		Weight addit. (per 100mm)	
					[N]	[kg]	[kg]	[kg]
ZLW-10120-ES	2,000	75	3M	Neoprene with fibre glass	200	4.7	0.30	
ZLW-10160-ES	2,000	75	3M		200	5.2	0.35	
ZLW-10200-ES	2,000	75	3M		200	5.9	0.45	

Part No.	A	Al	H	E2	E3	E4	C4	f	lt	ha	lz	l	d2 H7
ZLW-10120-ES	153	150	40	140	137	40	240	1	74	18	18	298	10
ZLW-10160-ES	193	150	40	180	177	90	240	1	74	18	18	298	10
ZLW-10200-ES	233	150	40	220	217	120	240	1	74	18	18	298	10

Part No.	d3	g3	D	K	at	lt2	lu	V [mm/rev] Standard
ZLW-10120-ES	38	M4	10	M6	43	59	20	75
ZLW-10160-ES	38	M4	10	M6	43	59	20	75
ZLW-10200-ES	38	M4	10	M6	43	59	20	75



Available from stock



▲ Tech up

- Toothed belt axis with double toothed belt based on linear guide system drylin® W
- Separate control of two linear carriages or synchronised operation
- Prepared for the connection of two NEMA stepper motors/DC motors
- Suitable as 7th axis in robotics for moving two robots
- Use of one linear axis instead of two
- Wide design offers full stability

■ Proof

- Service life of drylin® W can be calculated online
- Long-term tested in the igus® laboratory: 400,000 cycles without maintenance
- Tested: bearing change directly on the rail in under 30 seconds
- Motor control system can be simulated online

▼ Cost down

- Simplified due to delivery of linear axis/motor/motor control system from a single source
- All liners can be replaced directly on the rail without disassembly
- Cost-effective replacement set for pillow blocks (liners, lids, assembly tool)

● Sustainability

- Positioning of two linear carriages with only one axis instead of two
- Lubrication and maintenance-free
- Liner can be replaced, all metal components of the linear axis can be re-used for life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

Technical data and dimensions [mm]

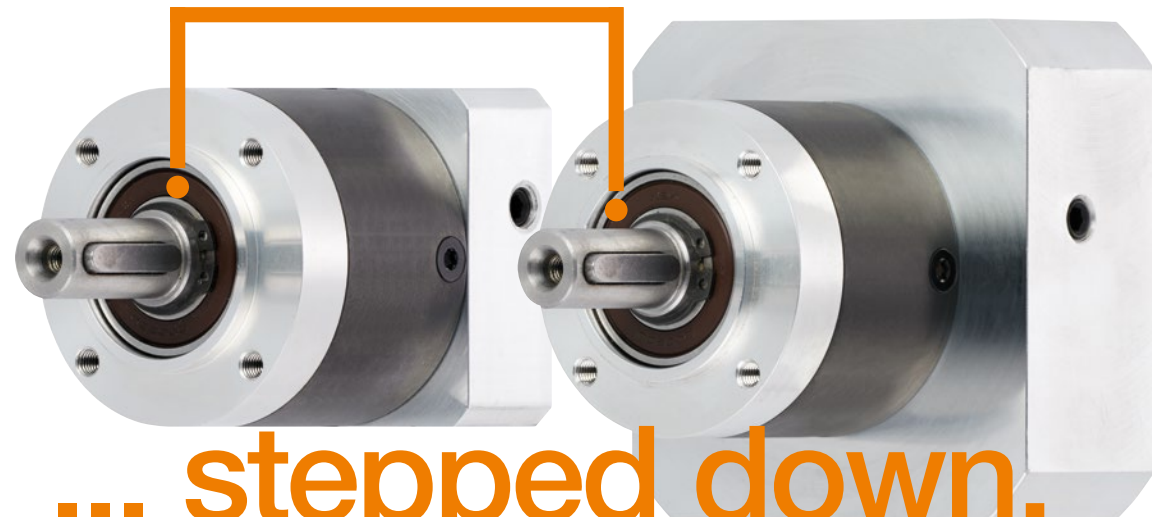
Part No.	Max. stroke length	Transmission [mm/rev]	Tooth profile	Drive belt		Weight	
				material	tension [N]	addit. (per 100mm) [kg]	
ZLWT-10160	2,000	75	3M	Neoprene with fibre glass	200	4.0	0.25
ZLWT-10200	2,000	75	3M		200	4.5	0.30
ZLWT-20200	3,000	144	8M	PU with stainless steel	750	11.0	0.50
ZLWT-20300	3,000	144	8M		750	12.5	0.65

Part No.	A	AI	H	E2	E3	E4	C4	f	lt	ha	lz	l	d2 H7
ZLWT-10160	193	150/200/250	40	180	AI - 13	90	240	1	74	18.0	18	448	10
ZLWT-10200	233	150/200/250	40	220	AI - 13	120	240	1	74	18.0	18	448	10
ZLWT-20200	252	200/250/300/350	63	234	AI - 18	120	240	1	98	28.5	27	596	14
ZLWT-20300	352	200/250/300/350	63	334	AI - 18	200	240	1	98	28.5	27	596	14

Part No.	d3	g3	D	K	at	lt2	lu	V [mm/rev] Standard
				For DIN912 - M6				
ZLWT-10160	38	M4	10	M6	107	59	20	75
ZLWT-10200	38	M4	10	M6	107	59	20	75
ZLWT-20200	60	M5	20	M8	122	78	40	144
ZLWT-20300	60	M5	20	M8	122	78	40	144

Available from stock

Gear reduction: 10, 15



... stepped down, ... in the case of slow rotating stepper motors, torque of

more torque ... up to 44Nm can be generated permanently ...

Tech up

- Electric motor output torque increase
- Can be combined with stepper and BLDC motors
- Suitable for lead screw and toothed belt axes, gantries and delta robots
- Available gear reductions: 3, 5, 10, 15

Cost down

- In conjunction with stepper motors
- Cost-effective alternative to servo motors

Proof

- Up to 75% more torque
- Can be used with igus® D1 motor control system

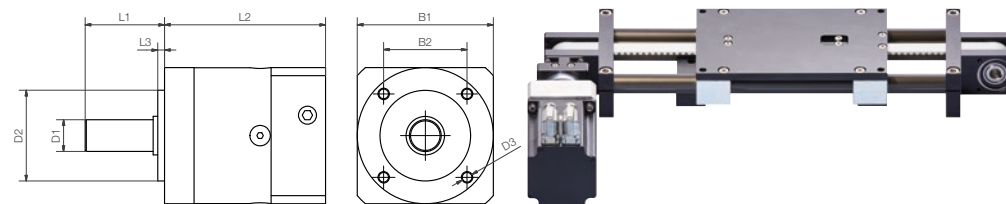
Sustainability

- Lubrication-free, clean, maintenance-free
- Long service life (up to 30,000 operating hours)
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:

www.igus.eu/plastic2oil

Dimensions [mm]

Part No.	Motor size	B1	B2	Ø D1 h7	Ø D2 h7	Ø D3	L1 ±1.0	L2	L3
GEA-60-10-60-ST-063	NEMA23	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-10-60-ST-080	NEMA23XL	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-10-90-ST-140	NEMA34	90.0	36.7	14.0	40.0	M5	35.0	86.0	3.0
GEA-60-15-60-ST-063	NEMA23	60.0	36.7	14.0	40.0	M5	35.0	84.0	3.0
GEA-60-15-60-ST-080	NEMA23XL	60.0	36.7	14.0	40.0	M5	35.0	84.0	3.0
GEA-60-15-90-ST-140	NEMA34	90.0	36.7	14.0	40.0	M5	35.0	99.0	3.0



Available gear reductions:
3, 5, 10, 15



Available from stock

... safe traversing ...

... lightweight, resistant limit and proximity switch with cable ...

Tech up

- Proximity switch for detecting
- With 2m connection cable
- As PNP and NPN versions
- NC and NO versions
- Small and lightweight
- Suitable for igus® axes

Cost down

- No extension cables needed
- Lightweight thanks to plastic housing
- Suitably harmonised due to delivery of drylin® linear axis/motor/proximity switches/motor control from a single source

Proof

- Can be ordered from the drylin® E product finder as a complete set

www.igus.eu/drylinE-finder

Sustainability

- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at:

www.igus.eu/plastic2oil



Initiator PNP NC kit with angled support; Part No.: **IK-0200-2**

Proximity PNP NC kit with straight support; Part No.: **IK-0201-2**

Reposition and adjustment is possible using a bracket and an inductive proximity switch
Cable length: 2m
Material holder: steel

Part No.	Housing	Switching output	Type	Connection
INI-AB-I-025-A-AA	Plastic	PNP	NO	Connector M8
INI-AB-I-025-A-AB	Plastic	PNP	NO	2m cable
INI-AB-I-025-B-AA	Plastic	PNP	NC	Connector M8
INI-AB-I-025-B-AB	Plastic	PNP	NC	2m cable
INI-AB-I-025-D-AA	Plastic	NPN	NO	Connector M8
INI-AB-I-025-D-AB	Plastic	NPN	NO	2m cable
INI-AB-I-025-E-AA	Plastic	NPN	NC	Connector M8
INI-AB-I-025-E-AB	Plastic	NPN	NC	2m cable
INI-AS-I-015-B-AA	Metal	PNP	NC	2m cable
INI-AS-I-015-E-AA	Metal	NPN	NC	2m cable

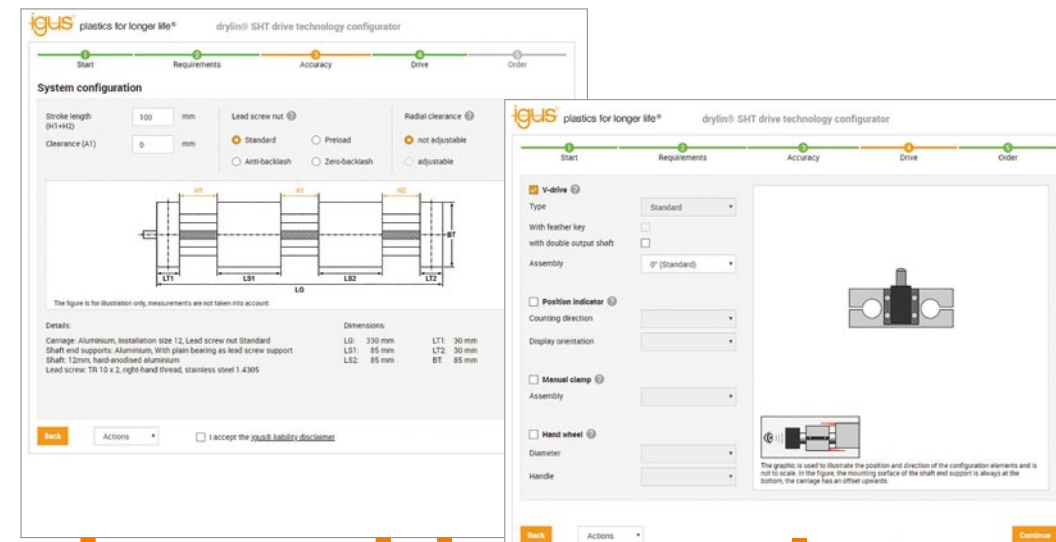
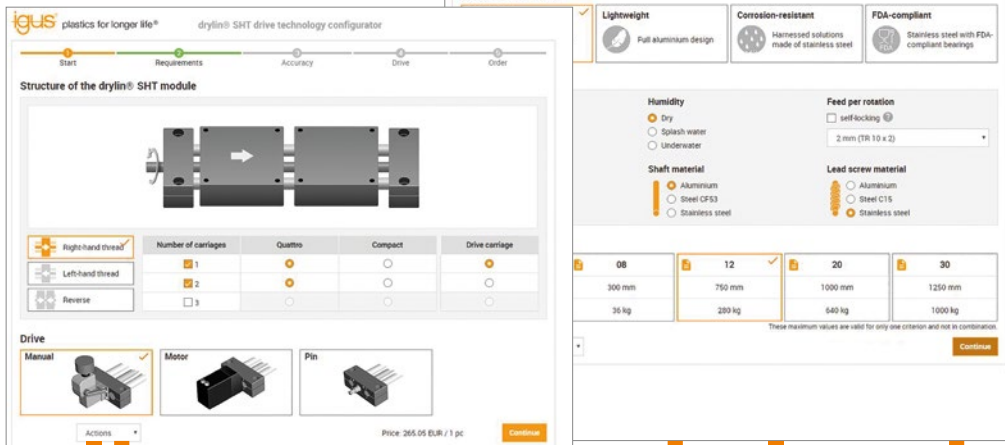
Available from stock



D1 dryve motor control



D3 dryve motor control



... linear module de
... configure a complete system with motor and control

signed in no time .
system online ...

Tech up

- Online configuration tool for SHT linear modules
- Configuration of single- or multiple-carriage systems
- Fast dryspin® high helix thread or self-locking trapezoidal thread
- Ready-to-connect configuration

Proof

- Service life can be calculated online
- All configuration models clear and plausible
- Incl. 2D dimensional drawing and 3D CAD model

Cost down

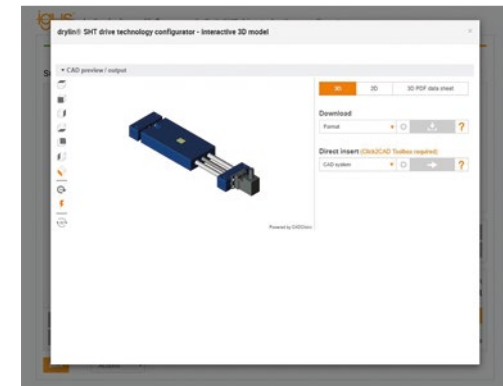
- Simple online configuration of a linear module
- Reduced design time due to ready-to-connect system that includes linear module/motor/dryve motor control system
- Incl. 2D dimensional drawing and 3D CAD model

Sustainability

- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about the topic at: www.igus.eu/plastic2oil

Six reasons why customers appreciate the igus® SHT Designer so much

- 1. Quick, flexible design**
"I get to build the linear system just like I want it"
- 2. Live price display**
"I know right away how much something will cost"
- 3. Clarity**
"I get a true-to-scale 2D PDF drawing"
- 4. Integration**
"I can use the 3D CAD model directly in my application"
- 5. Reorder**
"The customised configuration number allows me to re-order the linear system as often as I want"
- 6. Order online**
"The shopping cart allows me to request and order. It couldn't be easier"



www.igus.eu/sht-designer

new



150

Your colour, your logo, your design - your Low Cost Automation



152

ReBel® design study: for applications involving human-machine collaboration



154

drygear® - new, efficient generation of strain wave gears in compact design



154 highlight 2020

drygear® - new, efficient generation of strain wave gears in compact design



156

First robotics control software by igus®



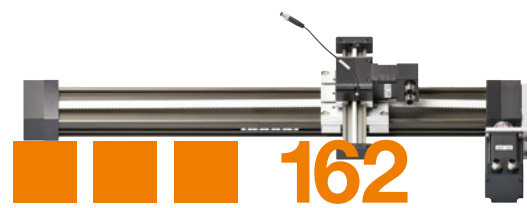
158

7th axis as linear adjustment offers more flexibility for robots



160

drygear® Apiro® modular kit for gearboxes and rotary axes



162

Complete assemblies with igus® e-chain systems® and chainflex® cables for linear robots



164

New education area on the robotics platform especially for training and research facilities



Find and configure products online

Tech up, Cost down. It's our job.

Build or buy robots ...

... automation

... Low Cost Automation



Tech up

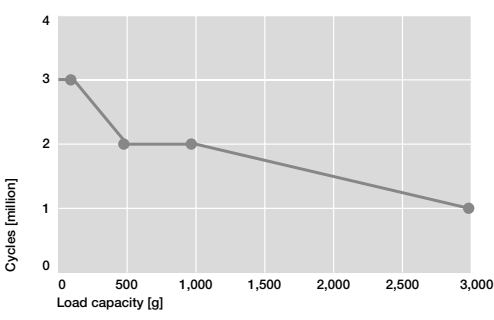
- robotlink® articulated arm robot with four or five degrees of freedom (4 DOF/5 DOF)
- Black standard colour, individual colour and logo possible
- Payload up to 30N
- Cycle times > 7s

Cost down

- Cost-effective, robust design
- Fast return on investment
- Simple programming through igus® robot control software iRC
- Adapter plate compatible for gripper or end effector and Vision

Proof

- Reach up to 790mm (5 DOF)
- Up to 3,000,000 cycles with 110g payload

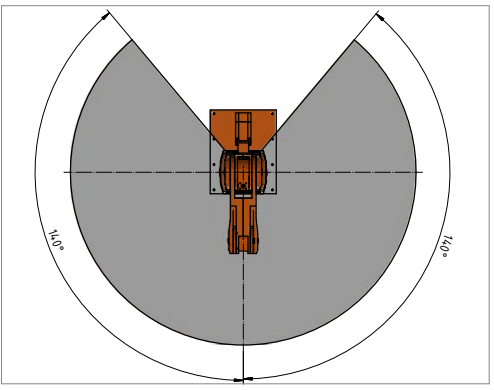
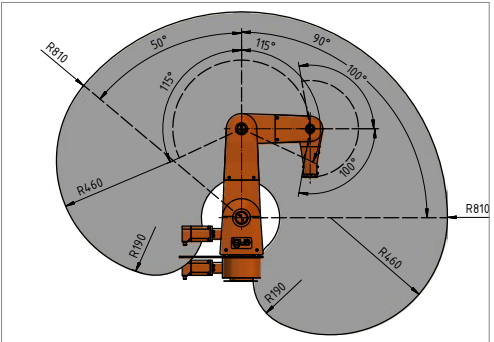


Sustainability

- 100% maintenance-free
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Black standard colour, individual colour and logo possible



Defined working area

Standard colour available from stock, special colour upon request



the 6 DOF* ReBeL[®] for service robotics

... applications involving human-machine collaboration ...

Internal cable routing



Tech up

- Lightweight
- With integrated control system and motor
- Human-robot collaboration capability intended
- 6 degrees of freedom

Cost down

- Cost-effective design through polymer injection moulding
- Control cabinet no longer necessary, all included

Proof

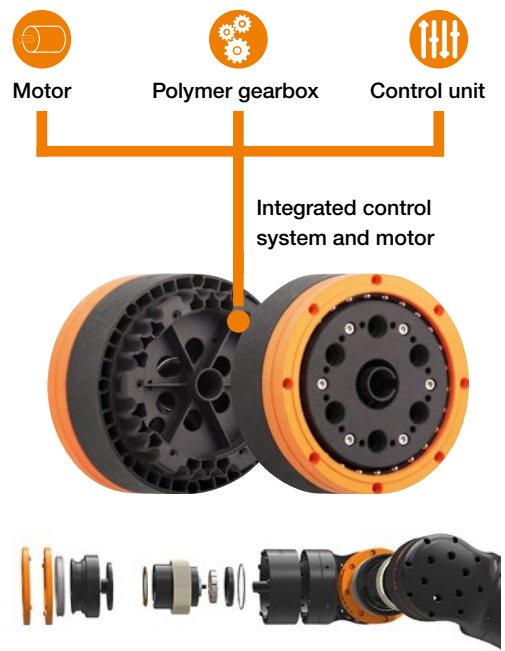
- Outer contour and most of the mechanical components are made of polymers and are therefore cost-efficient and lightweight

Sustainability

- Completely maintenance-free drylin[®] and robotlink[®] robotics solutions
- Lightweight components
- igus[®] supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

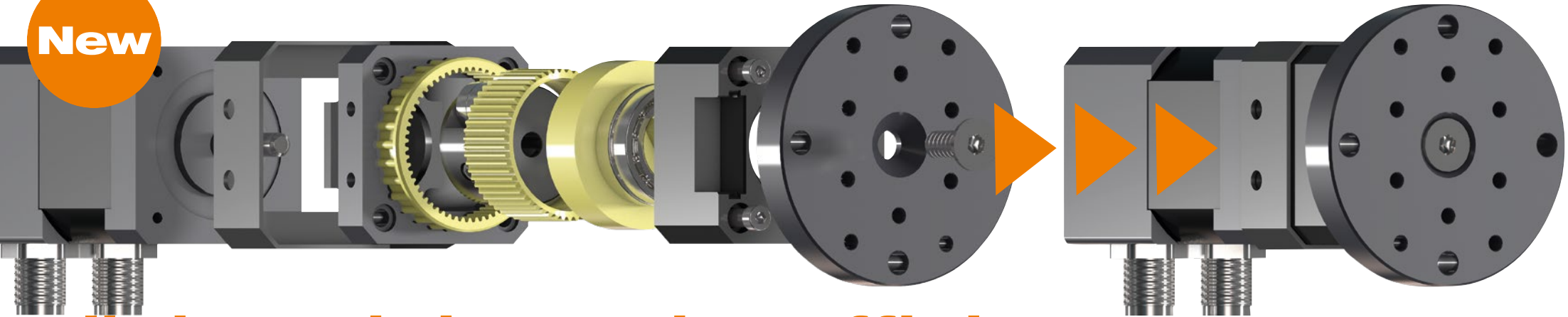


Previous version at the Hannover Messe 2019



* DOF = Degrees of freedom

New



... **lightweight and efficient** ...
 ... new generation of strain wave gears convinces by its

efficient ...
 particularly compact design ...

Tech up

- Improved generation of strain wave gears - up to 50% higher efficiency
- Lightweight due to igus high-performance polymers
- Extremely compact for integration as 5th axis in robotics
- All-round improved performance and running performance
- Transmission 28:1
- 5-10rpm in continuous operation (with NEMA17 stepper motor)
- Max. 4Nm (with NEMA17 stepper motor)

Proof

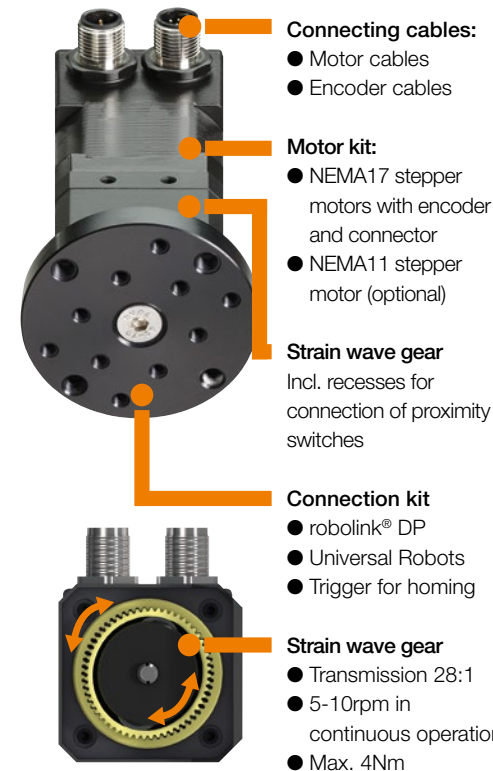
- 94% higher load-bearing capacity
- Torque fluctuations reduced by factor 3
- Reduction of the breakaway torque by factor 2

Cost down

- Cost-effective due to use of iglidur polymer material
- Quick and easy adaption as 5th axis in robotlink® DP
- Compatibility with gripper systems of other robot manufacturers
- Adapter disc of, among others, grippers and vision prepared

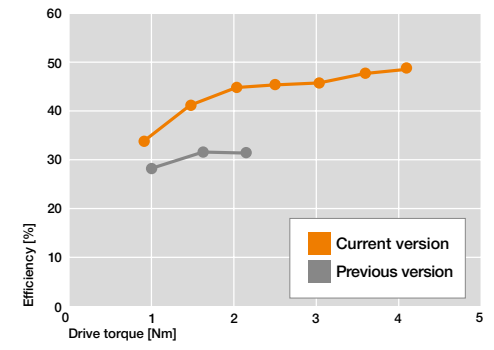
Sustainability

- Extremely low mass inertia as 5th axis in robotics
- Completely lubrication-free operation
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

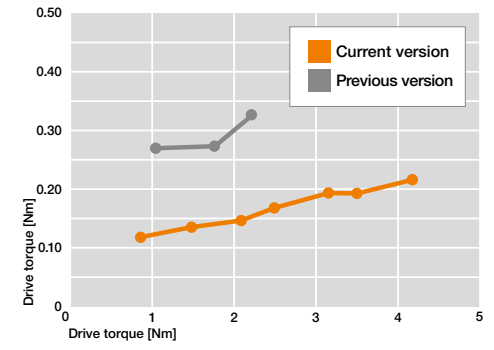


Available from stock

Efficiency comparison
 Current and previous version of the strain wave gear



Torque fluctuation comparison
 Current and previous version of the strain wave gear



New

... **simple intuitive** ... easy handling, licence-free download, test func

control .. tions before buying ...

Tech up

- First robotics control software by igus®
- Programming and integration of robots for everyone
- Available in control cabinet or on top-hat (DIN) rail assembly
- For linear robots, delta robots and robot arms

Cost down

- Try our programming software for free online before purchase
- Digital Twin feature
- Simple intuitive operation even for non-system integrators
- Save integration effort; order complete bundle including grippers and vision components via robotics platform www.rbt.com

Proof

- The user can test the software as a free download

1 Selecting the kinematics

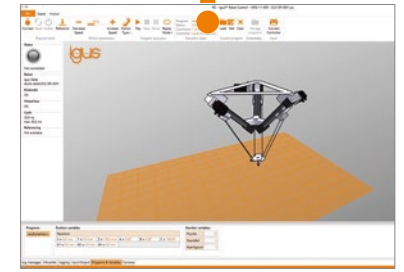
2 Connecting the robot

3 Referencing the robot

GO Ready to operate!

Sustainability

- All robot systems are 100% maintenance-free
- One control system can be used for all robot kinematics



Integrated cooling fan

24V mains connection

Emergency stop

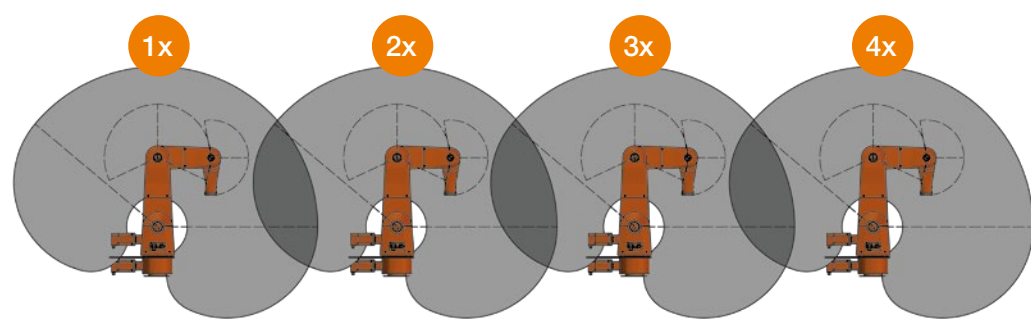
Cable outlet

CAN connection



... more flexibility for robots ...

... 7th axis as linear drive increases the flexibility and reach of



robots ...

robotic applications ...

Tech up

- Ready-to-install linear 7th axis in robotics
- For the flexible use of robots in the workspace
- Matching adapter kits for robotlink® DP and UR with UR Cap Integration

Cost down

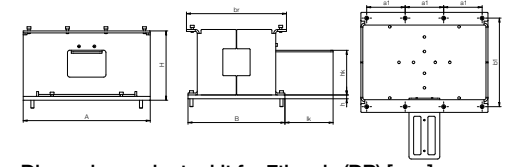
- Application of toothed belt axis ZLW-20 from the drylin® W linear modular system
- Variable stroke length up to 3,000mm
- Adapter kits suitable for linear carriages of the ZLW-20
- Kits available individually or save build time and effort and order completely assembled as ready-to-connect linear axis

Proof

- Service life of drylin® W profile rail systems can be calculated online
- Identical connection size for linear carriages ZLW-20
- Up to 4 times larger robot working area through linear adjustment with 7th axis

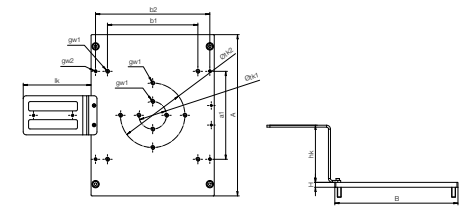
Sustainability

- Adapter kits can be ordered separately
- ZLW-20 toothed belt axis completely lubrication-free
- Existing toothed belt axis ZLW-20 can be retrofitted
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Dimensions adapter kit for 7th axis (DP) [mm]

Part No.	A	B	H	a1	b1	h	br	lk	hk
AK-D00190137	330	252	180	100	230.00	10	260	125	116



Dimensions adapter kit for 7th axis (UR) [mm]

Part No.	A	B	H	a1	b1	b2	tk1	tk2	gw1	gw2	lk	hk
AK-D00189916	330	252	10	180	185	234	56.6	132	M8	M6	139	117

Available from stock



... endless ideas ...

... Apipro® modular gearbox system ...

Tech up

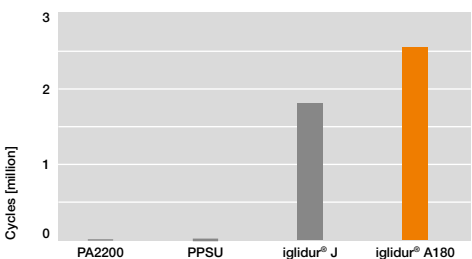
- Application examples from the Apipro® modular gearbox system
- Tips for assembly incl. parts lists
- Extensive selection aid for application implementation

Cost down

- Cost-effective Apipro® gearboxes made of solid iglidur polymer material
- Modular design for manual and motor-operated adjustments
- Fast conversion possible
- Assembly without any special tool

Proof

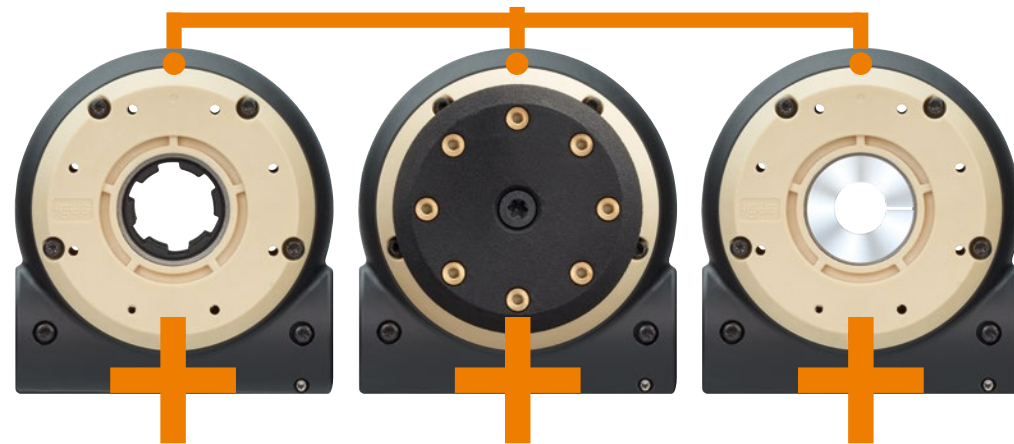
- Worm gears made of tribologically optimised igus® high-performance polymers
- 40% higher performance due to iglidur® A180



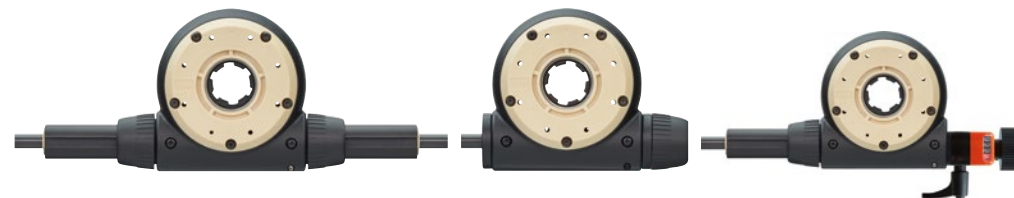
Sustainability

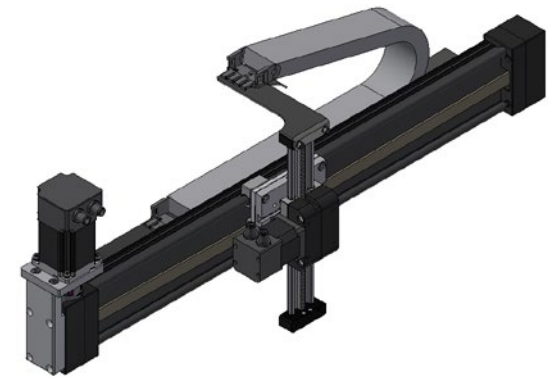
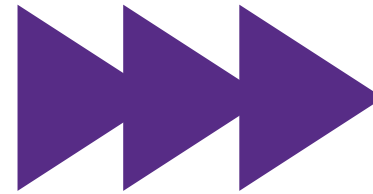
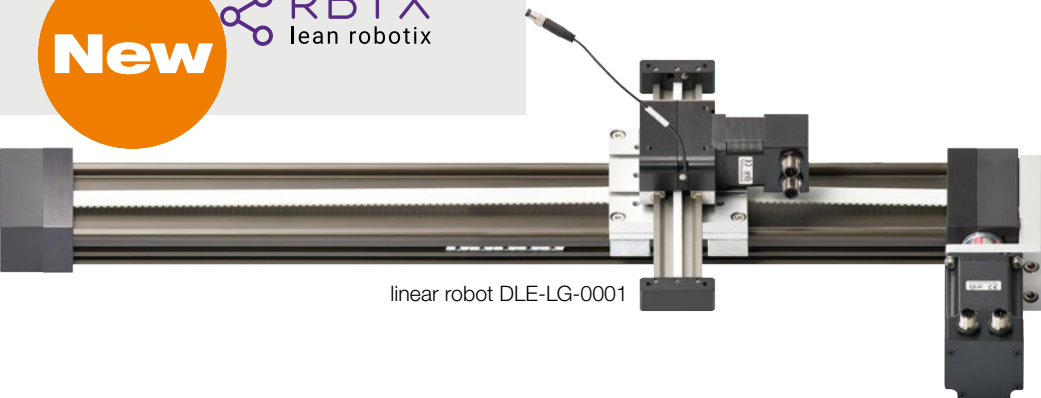
- Modular design enables rapid expansion, conversion and adaptation
- Very light and completely lubrication-free
- Have your energy chain recycled at the end of its life cycle with the igus® change recycling program. Irrespective of the manufacturer. You receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Configure individual systems, as simple gearbox, with rotary disc or coupling



Individual assembly with profiles, drive pins or other accessories





... linear robots, ready to connect...

... order complete assemblies online ...

... linear robots, ready to connect...

Tech up

- Ready-to-install kits of igus® e-chain systems® and chainflex® cables
- For linear robots DLE-LG-0001 and DLE-RG-0003

Cost down

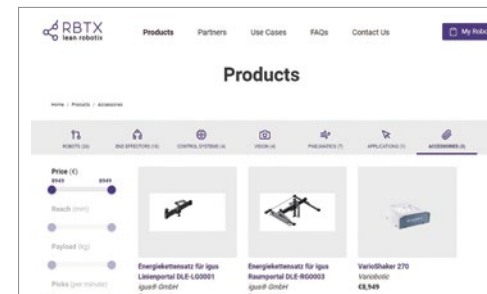
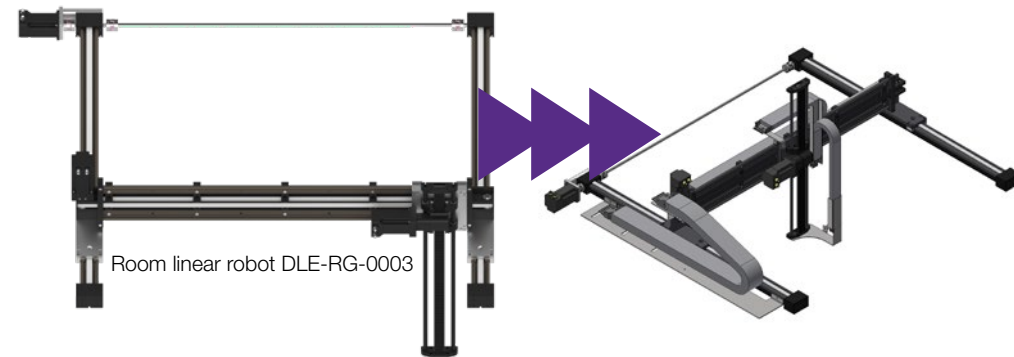
- Reduced integration effort
- Proven igus® quality in energy chains and cables
- Connection plates and fixing material included in the scope of delivery
- Ready-to-connect linear robot quickly ordered at www.rbt.com

Proof

- Energy chains and cables tested in the igus® laboratory
- Service life of drylin® W linear profile guidance system can be calculated online: www.rbt.com
- Order accessories directly with 2 clicks: www.igus.eu/ECS-service-life

Sustainability

- Have your energy chain recycled at the end of its life cycle with the igus® change recycling program. Irrespective of the manufacturer. You receive a voucher: www.igus.eu/change
- Maintenance-free linear robots
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Simply order: Ready-to-install kits igus® e-chains® and cables for linear robots DLE-LG-0001 and DLE-RG-0003

e-chain® E2i.15 series with matching connection plates and fixing material

Shielded set of cables consisting of connection cables for motors and encoders, as well as initiator kit (NC/PNP) optionally in length 3/5/10m.



education ... compa

... specially tailored to the needs of educational and research

Tech up

- New education area on robotics platform www.rbtix.com
- Application examples from robotics especially for educational and research institutions
- Products that "fit together"
- Robot kinematics up to grippers, vision and controls

Proof

- Fast return on invest
- Product compatibility
- No risk due to right of return
- Selection tools at www.rbtix.com

Cost down

- Finished kinematics for training and laboratory automation
- Example mini-delta for teaching and research
- Simply order via www.rbtix.com

Sustainability

- Completely maintenance-free drylin® and robolink® robotics solutions
- Lightweight components
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



ct delta kinematics

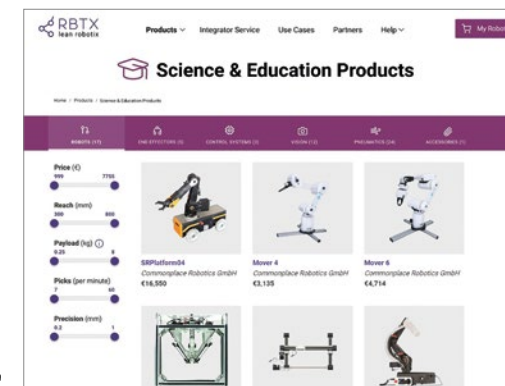
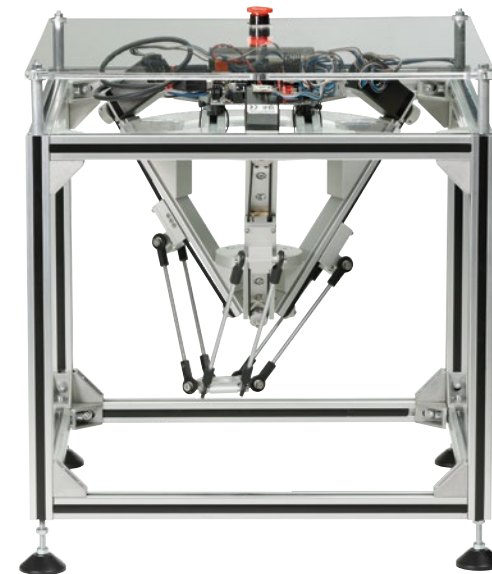
institutions ...

Mini-Delta

- Supplied in frame incl. base.
- 3 toothed belt axes with motors without encoder.
- Ideal for trying out mathematical kinematics or for simulating sampling in the smallest space.

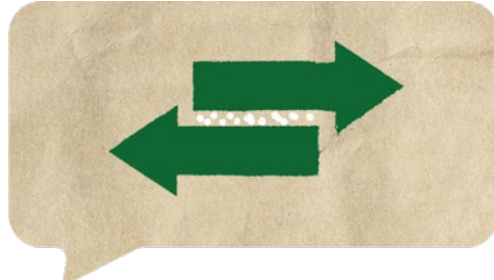
Part number: **DLE-DR-Education**
Payload 50g

More information
www.rbtix.com/education

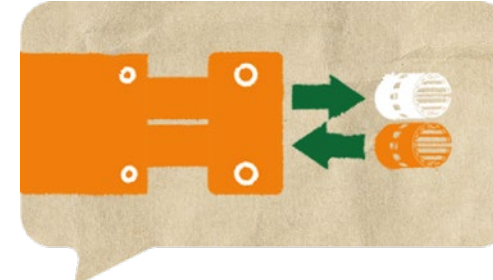




Rarely replace ...
Durable material



Extremely low friction, saving energy ...
Optimised tribology



Save resources and cost ...
Exchange bearings for drylin® linear guides



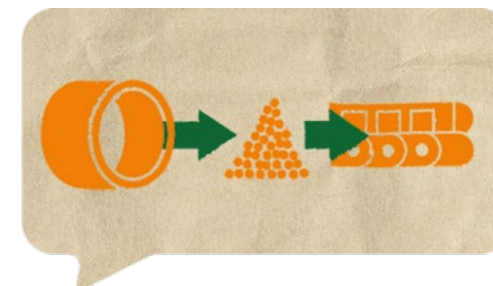
Replace only damaged parts ...
Predictive maintenance with smart plastics



No lubricating oil pollution ...
Lubrication-free and clean bearing technology



Lightweight, saving energy ...
Lightweight plastic material



99% of the waste can be reused ...
Internal recycling since the company's founding



New life for old chains ...
Recycling of old energy chains

Sustainability at igus® www.igus.eu/climate

When we developed the first high-performance polymers for movement, the topic of environmental protection was admittedly not our main focus. Today we know that products that last longer and do not require lubrication contribute to preserving our environment.

We engage in sustainable behaviour that goes beyond our products. For instance, an initial project of ours involved planting 2,500 trees for a new mixed forest. We are improving our organisation according to the

"Operation Clean Sweep" principles, avoiding plastic waste in production. Our environmental management is certified according to ISO 14001. An internal project group continuously introduces sustainable everyday improvements. One example is that we make disused trade show banners into iconic laptop bags.



... It's our job.

green

The "Green Chain Recycling" Program ... www.igus.eu/change

Since the very beginning, we have shredded faulty parts and sprue from plain bearing injection moulding and reused the granulate. We have now also begun a classical recycling program for energy chains: the igus® 'Change' Recycling Program. When your energy chain reaches the end of its service life, you can

send it back to us instead of disposing of it with other products as industrial waste. We separate the material, shred it, and put it back into circulation. You receive an igus® voucher based on the weight of the chain sent to us.

Still to come: plastic2oil in just 20 minutes ... www.igus.eu/plastic2oil

Sorting various plastics requires a great deal of effort, which is why lots of plastic is simply burned, making it impossible to recycle. Mura Technology Limited has developed a technology that transforms classically unrecyclable and mixed plastic wasted into oil within 20 minutes.

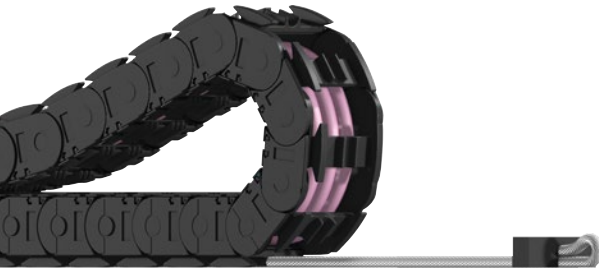
The technology is called "catalytic hydrothermal reactor", or "Cat-HTR" for short. Only water, high temperature and pressure are used to separate the cells and join them together again. igus® is supporting the first commercial plant in the UK with an investment of about five million euros.



news

e-chains® ... cables ... 2020 ...

igus.eu



Tech up, ...

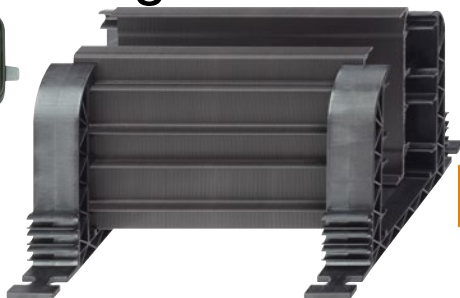
Cost down.

It's our job.

2020

motion plastics® ... for longer life ...

igus.eu



the-chain ... Moving energy made easy ...

... save 40% assembly time with the E4.Q e-chain®

... save 48% weight and installation time with the YE.42 e-chain®

... reduce unplanned downtime intelligent e-chain®

... save 26% cost

... save time and space with Module Connect

... save 55% cost with cobot brackets

... save up to 95% installation time

chainflex® cables ...

... reduce cost by up to 74.1%

Guarantee igus chainflex 36 months guarantee

igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

THE BEST PRICE-PERFORMANCE RATIO WWW.IGUS.EU/PRICE-RATIO

... also available as ready-to-connect readycable®

Dear customers,

Technology up – cost down ... we will always give you one of the two. That is our goal and what we have offered you for many years.

As always, if you can't find something you need, write to us and share your idea. "It's our job."

All the best for an innovative year,



Frank Blase

Frank Blase
Managing Director

The immense challenges of the upside-down year of 2020 have spurred us on to even greater efforts. You can find detailed information about each innovation and new product on the following pages: improve technology and reduce costs, details of these improvements, and information about sustainability.

Take advantage of our digital and virtual offers #HM20 ... #whatwewouldhaveshown



Our own igus® innovations 2020 trade show stand ... www.igus.eu/virtualexhibition ... and appointments with experts ... www.igus.eu/expertmeeting



igus® Academy – free webinars with the motion plastics® experts
Our webinars cover many areas, from materials science to project planning to assembly assistance. We also cover plastic recycling, building your own 3D printer, and much more. Topic overview and registration at www.igus.eu/academy

igus® motion plastics® ... more than 100 news

Tech up, Cost down. It's our job.

Home of Home Office Pioneers

► e-chains® and e-chain systems®

36-month guarantee

autoglide5

guidelite ECO

e-chain® E4Q

e-chain® E2.1

Office e-chains® OCO.20

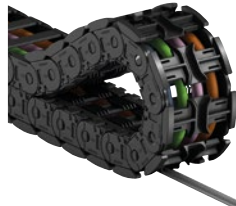
e-skin® SK

e-skin® SKS



Service life calculator - determine the guaranteed lifetime of your e-chain® and immediately obtain a certificate online

► Page 8



autoglide 5 - the alternative to busbar systems for compact spaces, and can be installed in one hour

► Page 10



Extremely quick and easy installation, also as replacement for busbar systems

► Page 12



The new e-chain® standard E4Q, now available in three further sizes

► Page 14



The new e-chain® standard for medium loads, now in 5 inner heights

► Page 16



New cable guidance for office and furniture with a timeless design

► Page 18



Two-piece cleanroom corrugated tube - can be opened and closed like a zipper

► Page 22



Two-piece cleanroom corrugated tube for a lower clearance height

► Page 24

► e-chains® and e-chain systems®

e-skin® SKY

e-skin® flat single pods

e-skin® flat with e-chain®

e-spool® flex 2.0

CRM rotary module

Miniature rotating energy supply

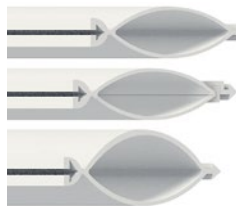
e-chain® YE.1

e-loop



Cost-effective hybrid cleanroom corrugated tube, lower clearance height and more unsupported length

► Page 26



e-skin® flat SKF single pods can be filled easily, modular, compact and can be used in cleanrooms

► Page 28



Particle-free cable guidance for unsupported travels

► Page 30



e-spool® flex 2.0 without slip ring - guides energy, data, air and fluids in a space-saving way and without interruptions

► Page 32



Rotary module from the e-spool® flex for maximum rotation angle in smallest installation spaces

► Page 34



Complete system with plastic guide trough and rotation angle of 360°

► Page 36



Plastic-steel hybrid e-chains® - strong, vibration-proof, compact and easy to assemble

► Page 38



Modular energy chain system e-loop for hanging applications

► Page 40

► e-chains® and e-chain systems®

HS glide bar

Strain relief

Fibre-rod UR10/10e

Retraction system TR.RSEL

Retraction system TR.RSEC

► smart plastics

isense EC.PR

isense EC.PP

isense EC.W.06



Five times more durable due to tribologically optimised material

► Page 42



Design study: new strain relief with 50% less assembly time

► Page 44



Fibre-rod system enables virtually contact-free guidance of cables on UR10/UR10e universal robots

► Page 48



Linear, cost-effective retraction system in two new sizes

► Page 50



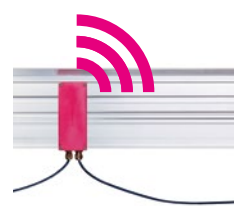
New compact retraction system for guiding cables and media for application on robots with small payloads

► Page 52



Protection for travels up to 1,000m. Avoid unplanned repair work

► Page 54



Travel measuring system integrated in troughs delivers position data for the EP.PR


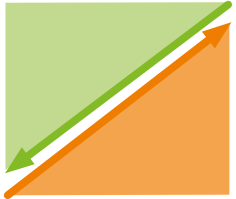





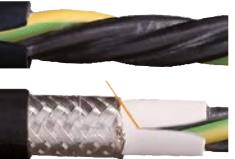
► Page 56







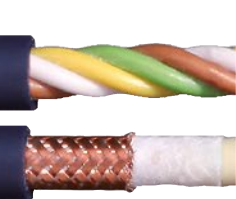


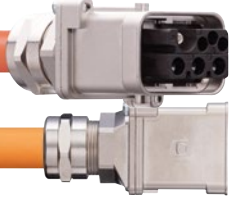
Online service life monitoring crossbar with integrated IoT cloud connection

► Page 58

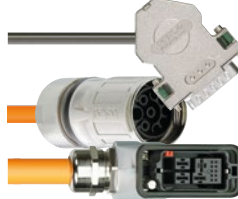
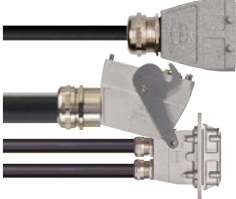




▶ smart plastics ▶ chainflex® cables ...

<p>isense EC.I.SU.02</p>  <p>Integrated offline service life monitoring for unsupported e-chain systems®</p> <p>▶ Page 60</p>	<p>Price check</p>  <p>Reduce costs and/or increase the service life of your application</p> <p>▶ Page 64</p>	<p>UL verified laboratory</p>  <p>Qualified monitoring of laboratory and manufacturing with UL</p> <p>▶ Page 66</p>	<p>Standards</p>  <p>chainflex® approvals for global security</p> <p>▶ Page 68</p>	<p>DNV-GL</p>  <p>Safety certificate with defined materials for the maritime sector</p> <p>▶ Page 70</p>	<p>Bus cables 300V UL</p>  <p>Ethernet cable with 300V UL voltage, no separators required</p> <p>▶ Page 72</p>	<p>CFBUS 600V UL</p>  <p>High-end bus cable doubled to 600V UL</p> <p>▶ Page 74</p>	<p>CF34/CF35 UL temperature</p>  <p>CF34.UL.D and CF35.UL TPE motor cables for higher cable temperature according to UL</p> <p>▶ Page 76</p>
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▶ chainflex® cables ... ▶ readycable®

<p>DriveCliq 300V UL</p>  <p>DriveCliq cables for extremely small radii and long travels from now on with 300V UL voltage</p> <p>▶ Page 78</p>	<p>CFM control cables</p>  <p>New generation of control cables with TPE core insulation saves 20% installation space</p> <p>▶ Page 80</p>	<p>Shipping drum</p>  <p>Save 84% shipping cost with chainflex® CASE for sending and storing cables on drums</p> <p>▶ Page 82</p>	<p>Single Pair Ethernet</p>  <p>Continuous ethernet communication with the slim Single Pair Ethernet cable</p> <p>▶ Page 84</p>	<p>CF298/CF299</p>  <p>High-end data cables CF298 and CF299 for small radii, 100% more double strokes guaranteed</p> <p>▶ Page 86</p>	<p>CFROBOT7</p>  <p>Motor cable CFROBOT7 optimised for ±180°/m on robots</p> <p>▶ Page 88</p>	<p>CF887</p>  <p>Very cost-effective servo cable CF887 for a guaranteed amount of 5 million double strokes in e-chains®</p> <p>▶ Page 90</p>	<p>SEW EPLAN macros</p>  <p>Fast planning: EPLAN macros for SEW drives</p> <p>▶ Page 94</p>
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▶ readycable® harnessed cables ... ▶ Sustainability at igus®

<p>Hybrid drive cables</p>  <p>Latest hybrid technology with Hybrid MS2N & IndraDrive MI: only one cable for power and data</p> <p>▶ Page 96</p>	<p>Extension cables</p>  <p>Extension cables for robots: harnessed, ready-to-connect and ready for use</p> <p>▶ Page 97</p>	<p>Heavy duty</p>  <p>Cable harnessing & ready-to-install e-chain systems® for tough environments</p> <p>▶ Page 98</p>	<p>Module Connect adapter</p>  <p>The Module Connect adapter, connected in seconds</p> <p>▶ Page 100</p>	<p>readycable® factories</p>  <p>Fully equipped international readycable® factories</p> <p>▶ Page 102</p>	<p>Sustainability at igus®</p>  <p>green... igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil</p> <p>▶ Page 104</p>
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10 highlight 2020

autoglide 5 - the alternative to busbar systems for compact spaces, and can be installed in one hour

Tech up, Cost down. It's our job.



8 Determine the guaranteed lifetime of your e-chain® and obtain a certificate online



10 autoglide 5 - the alternative to busbar systems for compact spaces, and can be installed in one hour



14 The new e-chain® standard E4Q now available in three further sizes



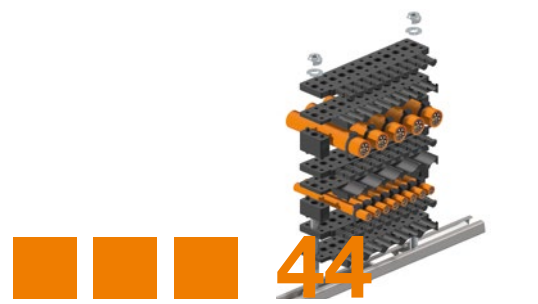
28 e-skin® flat SKF single pods - can be filled easily, is cleanroom compatible, compact and modular



32 Space-saving and uninterrupted guidance with the e-spool® flex 2.0 without slip ring - energy, data, air and fluids



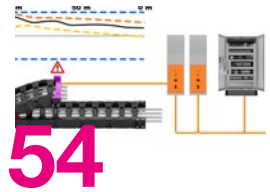
40 Modular e-loop energy chain system for hanging applications



44 Design study: new strain relief with 50% less assembly time



48 Fibre-rod system enables virtually contact-free guidance of cables on UR10/UR10e universal robots



54 Protection for travels up to 1000m. Avoid unplanned repair work

Moving energy made easy ...

new...e-chain®

... e-chains® and e-chain systems®

New



... 36-month e-chain® guarantee¹ ...

... service life calculator - determine the guaranteed service life of the e-chain® and receive your certificate



Tech up

- With a 36-month guarantee on all e-chain® components that fail due to wear and tear¹
- Guarantee matches to your exact application
- Generate a guarantee certificate with the e-chain® service life calculator
- The chainflex® cables used in the e-chain® also come with a 36-month guarantee
- Online tool determines the lifetime of the e-chains® in double strokes

Proof

- Using the data from the test laboratory, the e-chain® service life calculator determines the operating time of igus® standard e-chains® in specific applications
- Data from over 10 billion e-chains® test cycles per year feed into the e-chains® service life calculator
- Calculate e-chains® service life and request certificate: www.igus.eu/ECS-service-life

Cost down

- Always choose the most cost-effective e-chain® that works reliably
- Free replacement parts for e-chains® that fail due to wear and tear
- Receive guarantee certificate via mail

Sustainability

- Select long service life and extend durability of the application
- Have your energy chain recycled as part of the igus® "chainge recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/chainge
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

e-chain® service life calculation

Article	<input type="text"/>	Search	Inner width	<input type="text" value="100"/>
System	E4.1 e-chains®		Radius	<input type="text" value="400"/>
Series	Series E4.56		Outer width	134 mm
e-chain®	E4.56.10.400.0		Internal height	56 mm

Temperature: 40 °C

Acceleration: 0.1 m/s²
Speed: 2 m/s
Fill weight: 3 kg/m
Length of travel: 3500 mm

Dirt:
Hard knocks:

Result metric imperial

The application is self-supporting straight.
The service life is 30,173,684 double strokes.
This corresponds to a total distance of 211,216 kilometers.

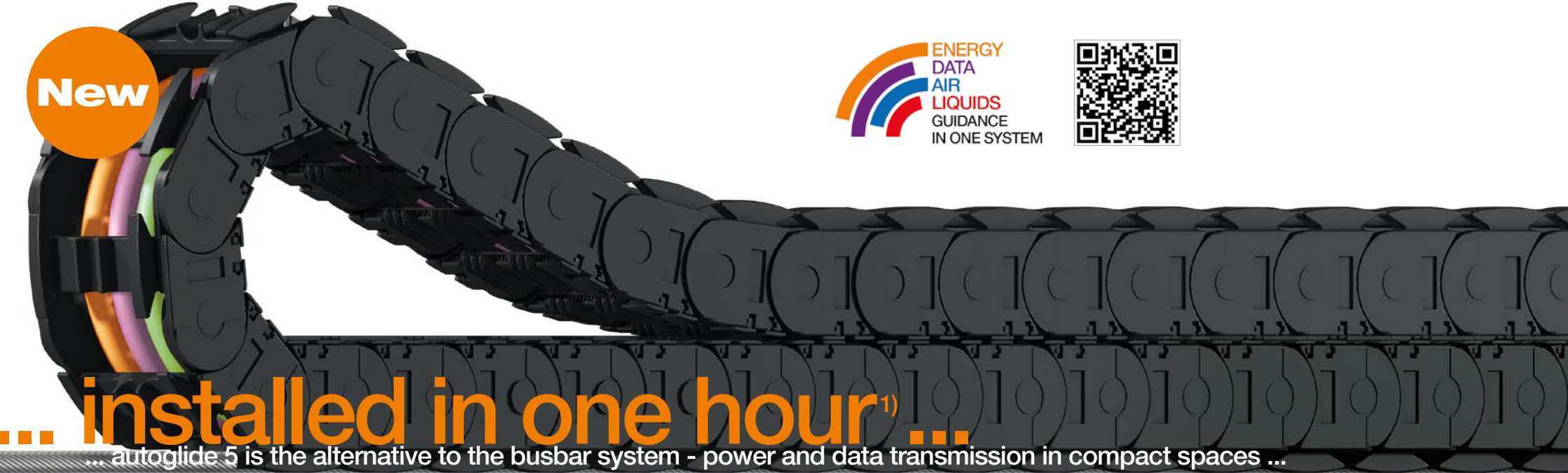


Service life calculation - after entering fill weight travel, speed and acceleration, the service life of the e-chains® is calculated. The guaranteed service life is specified in double strokes and kilometres. Have your certificate sent to you by e-mail by clicking "Request a 36-month guarantee certificate".

1) The e-chain® service life guarantee applies to the indicated number of double strokes calculated according to the igus® online service life calculator

New

**ENERGY
DATA
AIR
LIQUIDS
GUIDANCE
IN ONE SYSTEM**



... installed in one hour¹⁾ ...

... autoglide 5 is the alternative to the busbar system - power and data transmission in compact spaces ...

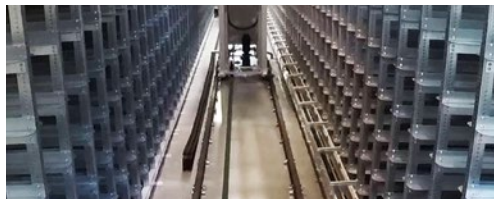
Tech up

- Energy, data, air and liquids in ONE system
- Often saves two or more other systems needed for transmitting data
- 4m/s speed
- 80m travel
- Quiet operation: 63db(A) at 2m/s
- 50% floor remains free, no guide trough needed

Cost down

- 88% shorter assembly time¹⁾
- Ready to install from €49/m²⁾
- Available as a harnessed, ready-to-install system with cables, hoses and connectors
- Less maintenance, less maintenance time and cost
- Predictive maintenance - optionally with the **isense** additional module: www.igus.eu/smartplastics

Proof



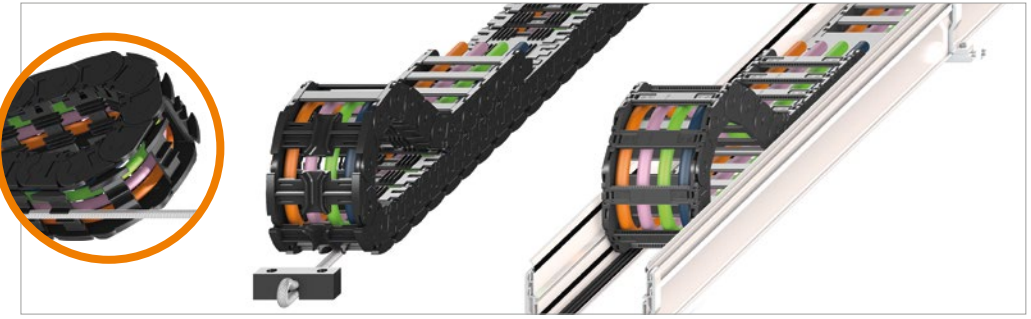
● Tested in the igus® laboratory and assembled by our customer, Beewen GmbH.

Sustainability

- 64% less energy consumption for producing autoglide 5³⁾
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



autoglide 5 is the alternative to busbar systems - for power and data transmission in compact spaces and for fast movement in aisles.



88% shorter assembly time compared to aluminium trough¹⁾ with new cost-effective autoglide 5 energy supply system for intralogistics, crane systems and other applications with long travels.

Travel	Speed	Sound during operation
80m	4m/s	63dB(A) at 2m/s

Available from spring 2020

1) Compared to conventional standard solutions with guide trough, tested installation of approx. 40m travel
 2) Incl. e-chain® 2400.07AG.075.0, steel rope guide, harnessed bus cable and 5 single cores 6mm²
 3) Compared to an energy chain with aluminium trough on 50m travel



... ready to install from €38/m¹ ...

... guidelite ECO - very quick and easy to install ...

Tech up

- Very light, tough plastic guide trough
- Very safe - no exposed electrical conductors
- Can be used for replacing busbar systems
- In contrast to busbar systems, light signals, liquids and air can be guided safely
- Very quick and easily to install

Proof



- guidelite ECO is 59% lighter than comparable steel or aluminium systems²

Cost down

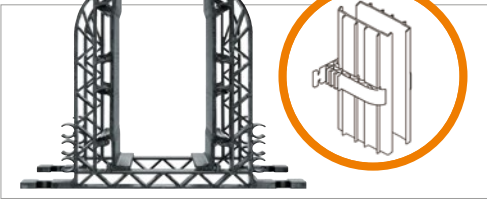
- Ready to install from €38/m¹
- Save installation time and cost
- Predictive maintenance - optionally with the **isense** additional module: www.igus.eu/smartplastics

Sustainability

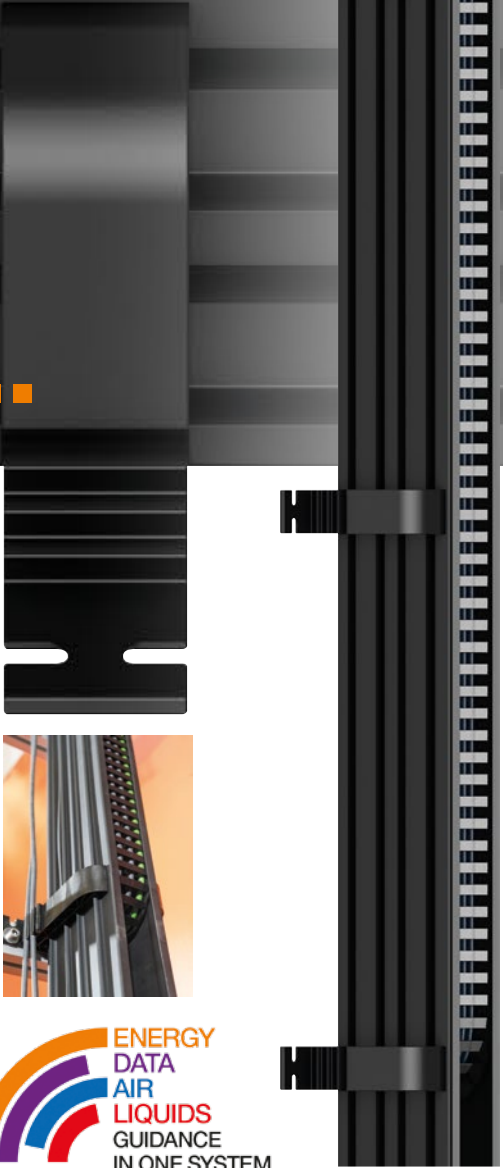
- Due to the 59% lighter construction, less mass needed to be accelerated. Smaller drives and motors can be used; which saves energy²
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Small and easy for installing e.g. round cables at lifters and small storage and retrieval units.



The guidelite ECO is an uninterrupted guide trough, which is supported by a console every 500mm.



Stroke height	Acceleration	Console material	Material channel sides
up to 40 metres	4m/s	igumid G	PVC

Available from spring 2020

¹ Including trough, e-chain® E2.15.050.048.0, filling 5 x single cores 6mm² plus bus or fibre optic cable
² Tested in the igus® laboratory in direct comparison with micro flizz® 10



Guarantee
igus e-chain
36
month guarantee



34 –
82mm

... 40% faster assembly ... new sizes ...

... the new e-chain® standard in 4 sizes: 58mm and new: 34mm, 42mm and 82mm ...

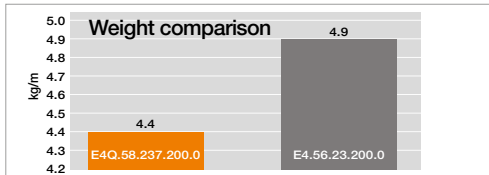
Tech up

- Tool-free opening and closing
- Reduced projections into the interior, for easier filling with open e-chain®¹⁾
- 15% higher pull-out strength of the crossbars¹⁾
- 10% less weight due to material removal¹⁾
- Also available 17dB(A) quieter due to noise dampening parts made of noise-reducing material²⁾

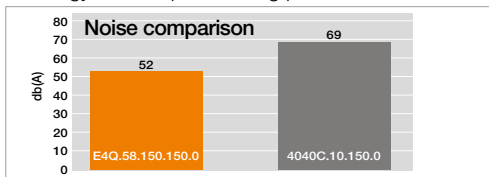
Cost down

- 40% less installation time¹⁾
- Up to 35% saving possible³⁾
- 36-month e-chains® guarantee:
www.igus.eu/ECS-service-life
- Predictive maintenance - optionally with the **isense** additional module: www.igus.eu/smartplastics

Proof



- Proof of sustainability: 10% less material = 10% less energy consumption during production¹⁾



- Proof of noise: 17dB(A) less than 4040C²⁾

Sustainability

- 10% less material = 10% less energy consumption during production
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

1) Compared to the E4.1 system
2) Compared to the 4040C series
3) Due to a higher fill weight, the more cost-effective smaller series can be used if necessary



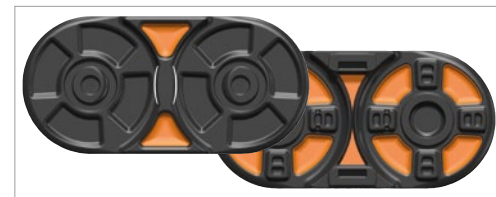
Completely tool-free opening and closing of the E4Q - 40% faster assembly or filling¹⁾.



Optional noise dampening - new system for noise reduction - 17dB(A) more quiet²⁾.



The vertical and horizontal stop-dogs provide extra rigidity and allow large unsupported lengths.



Lighter structure of the e-chain® links due to material saving - 10% less weight¹⁾.

Part No.	Inner height	Outer height	Inner width	Outer width	Bend radius
E4Q.34	34mm	60mm	75 – 400mm	98 – 423mm	063 – 300mm
E4Q.44	44mm	70mm	75 – 400mm	101 – 426mm	075 – 350mm
E4Q.58	58mm	84mm	100 – 400mm	134 – 334mm	135 – 500mm
E4Q.82	82mm	108mm	100 – 400mm	150 – 350mm	150 – 1,000mm

Available from summer 2020

Detailed product range online



Guarantee
igus e-chain
36
month guarantee



Fast assembly in seconds
with the chain opener -
open 1m in 2 seconds.



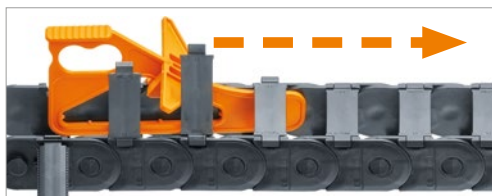
17 -
48mm

... quieter during operation ... faster assembly
... E2.1 - the new e-chain® standard for medium loads in 5 inner heights - new 17mm and 21mm ...

Tech up

- 20% to 30% larger gliding surfaces for longer service life in gliding operation¹⁾
- 7dB(A) quieter due to integrated brake²⁾
- Now also available as a fully enclosed version, a standard solution for hydraulic hoses
- 10% higher strength than previous series¹⁾
- Good accessibility-crossbars can be snapped open on both sides, from above and from the side on the inner or outer radius

Proof



- Tested in the igus® laboratory E2.10/E2.15: opening of 1m e-chain® in 2 seconds using the optional e-chain® opening tool: www.igus.eu/E21open

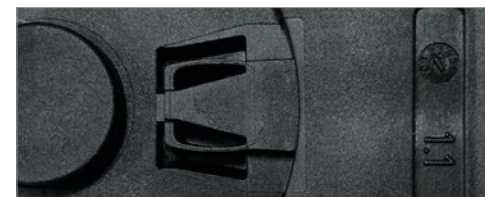
1) Compared to the previous series E2/000
2) From size E2.26

Cost down

- Approx. 30% more cost-effective when the new closed design E2C.21¹⁾ is used
- 17% more space with E2.17 compared to the smallest bend radius of the previous model¹⁾
- Longer service life for gliding applications due to higher gliding surfaces
- 36-month e-chains® guarantee:
www.igus.eu/ECS-service-life
- Predictive maintenance - optionally with the **isense** additional module: www.igus.eu/smartplastics

Sustainability

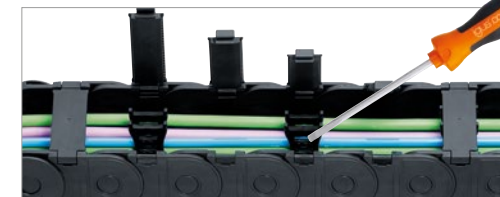
- Same size and connection size as previous model allows for a 1:1 upgrade. No changes in the machine design required
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Special brake in the stop-dogs reduces noise level by up to 7dB(A)²⁾.



Interior separation is secure even when e-chain® is open due to an integrated latching on the crossbar.



Crossbar with integrated grid and openable from both ends with a screwdriver.



Integrated gliding surfaces ensure a long service life, even on long travels.

Part No.	Inner height	Outer height	Inner width	Outer width	Bend radius
E2.17*	17mm	23mm	50mm	61.1mm	028mm
E2.21*	21mm	28mm	50mm	63.8mm	035mm
E2.26**	26mm	35mm	38 - 77mm	54 - 93mm	048 - 250mm
E2.38**	38mm	50mm	50 - 100mm	66 - 166mm	063 - 250mm
E2.48**	48mm	64mm	75 - 150mm	96 - 171mm	075 - 300mm

*Available from spring 2020 **Available from stock

Detailed product range online

DESIGN Study



Different colours are possible.



... cable guidance for office and furniture ...

... OCO.20 - innovative office e-chain® ...

Tech up

- Optimised design
- Flexible fitting
- Easy to lengthen and shorten
- Mounting brackets with built-in magnets for easy attachment
- Good holding force of the e-chain® links up to 150N

Cost down

- Save installation time and cost with tool-free filling due to "easy" design
- Order to required length
- Cost-effective in purchase

Proof



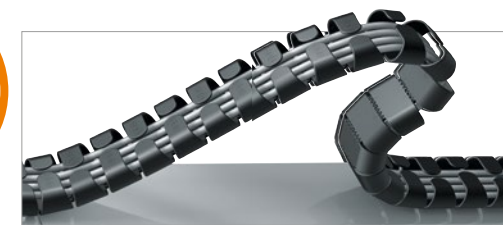
- OCO.20 Tensile test on the holding force of the e-chains®: 3D printed prototypes were successfully tested with 150N holding force in a tensile test

Sustainability

- Free of bisphenol A (BPA-free)
- 100% halogen-free, particularly suitable for use in public buildings
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Built-in magnets for easy attachment, e.g. to metal desks.



Laterally offset "Easy principle" for easy cable installation and secure cable retention.



A screwed connection is possible, for which two small holes are provided.

Part No.	Inner height	Outer height	Inner width	Outer width
OCO.20	20mm	25mm	39mm	64mm

Available upon request

Clean-Room

Guarantee
igus e-chainflex
36
month guarantee



Company's own cleanroom laboratory according to IPA certification in the igus® technical centre, Cologne. Cleanroom compatibility of chain applications can be quickly tested to your requirements.



... igus® cleanroom energy supply systems ...

... the modularity of e-skin® enables flexible adjustment to your requirements ...

Tech up

- For fast, short, unsupported applications
- Quiet operation, from 32dB(A)
- Up to 6dB(A) quieter than usual "clean cable"
- IPA classification ISO Class 1
- Abrasion-resistant

Proof



- In the laboratory, e-skin® withstood more than 6.4 million double strokes at 3m/s

Cost down

- Cable-friendly with defined minimum bend radius
- Assembly-friendly
- Easy to open and flexible filling
- Reclosable opening mechanism

Sustainability

- 99% material savings possible, as you can replace a cable without having to replace the entire system
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

System comparison of cleanroom e-skin® energy supply from igus®

Parameters	e-skin® SK	e-skin® soft SKS	e-skin® hybrid SKY
Diagrams of e-skin® coloured here for demonstration purposes			
Required clearance height	100%	67%	87%
Fill weight	100%	70%	85%
Unsupported length	100%	60%	81%
Price	88%	100%	95%
Price compared to commercially available "Clean Cable"	65%	65%	65%
DIN EN ISO Class 1			
Openable version	Yes	Yes	Yes
Enclosed version	Yes	Yes	Yes
Operating noise	33dB(A)	32dB(A)	33dB(A)
Quieter than usual "clean cables"	5dB(A)	6dB(A)	5dB(A)
Page number	Page 22	Page 24	Page 26

Even quieter and space-saving: e-skin® flat, page 28

More solutions for the cleanroom at: www.igus.eu/cleanroom



... for higher loads ...

... cleanroom-compatible corrugated tube e-skin® SK - two-piece corrugated tube ...



Tech up

- 15% higher fill weight¹⁾
- 50% longer unsupported length¹⁾
- Bend radii from 55mm up to 100mm
- Suitable for cleanrooms according to IPA ISO class 1²⁾
- 5dB(A) quieter than usual "clean cable"
- For fast, short, unsupported applications
- Interior separation system consisting of "tribo-optimised" iglidur® material - to further minimise abrasion between the cables

Proof

- The igus® e-skin® SK is suitable for use in Class 1 cleanrooms according to ISO 14644-1. Tested by the IPA Fraunhofer Institute, Report IG 1907-1125

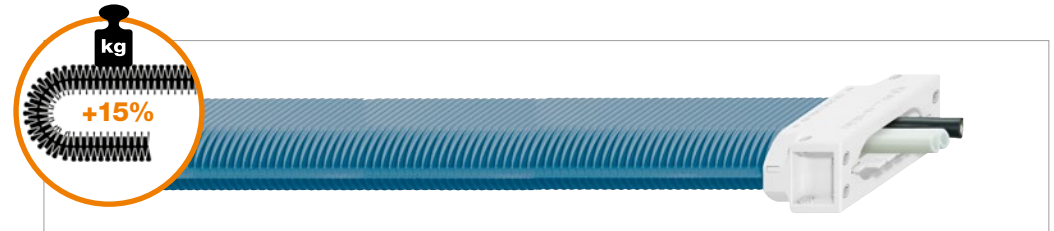


Cost down

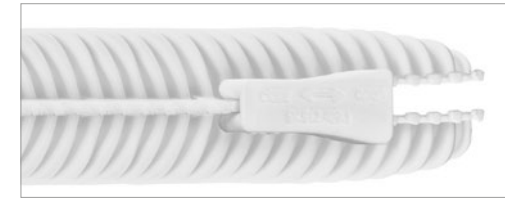
- Cable-friendly with defined minimum bend radius
- 12% more cost-effective than e-skin® SKS, page 22
- 35% more cost-effective than usual "clean cable"
- No minimum order quantity
- IPA ISO Class 1 chainflex® cables with a 36-month guarantee: www.igus.eu/cleanroom-cables

Sustainability

- 99% material savings possible, as you can replace a cable without having to replace the entire system
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



e-skin® SK - 15% higher additional load¹⁾ and 50% more unsupported length¹⁾ (e-skin® coloured here for demonstration purposes).



Reclosable opening mechanism: opening and closing with "zipper" function.



New interior separation system consisting of "tribo-optimised" iglidur® material for minimising abrasion.

Part No.	Inner height	Outer height	Inner width	Outer width	Bend radius***	Unsupported
SK28	28mm	40mm	68mm	95mm	≥ 055mm	≤ 1.1m
SK40	38mm	57mm	85mm	118mm	≥ 100mm	≤ 2.0m

***Note: the minimum bend radius is determined by the bottom of the e-skin® corrugated tube!

Available from stock

Detailed product range online

1) Based on the latest test results for e-skin® SK40 series done in the igus® laboratory
 2) Tested was e-skin® 0.SK28.068.02.1 (prototype) at v₁ = 0.5m/s, v₂ = 1m/s and v₃ = 2m/s or a₁ = 1m/s², a₂ = 2m/s², a₃ = 4m/s²



... for small installation spaces ...

... cleanroom-compatible corrugated tube e-skin® SKS - two-piece corrugated tube ...

Tech up

- 32% less clearance height than e-skin® SK28, page 22
- Space requirement: from 135mm
- Bend radii from 40mm up to 100mm
- Suitable for cleanrooms according to IPA ISO class 1¹⁾
- 6dB(A) quieter than usual "clean cable"
- Interior separation system consisting of "tribo-optimised" iglidur® material - to further minimise abrasion between the cables

Proof

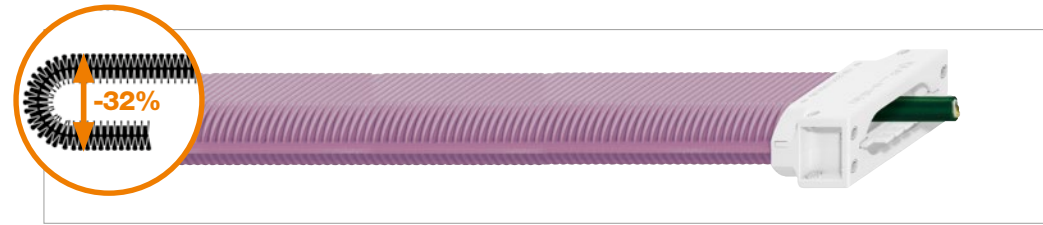
- The igus® e-skin® SKS (e-skin® soft) is suitable for use in Class 1 cleanrooms according to ISO 14644-1. Tested by the IPA Fraunhofer Institute, Report IG 1907-1125¹⁾

Cost down

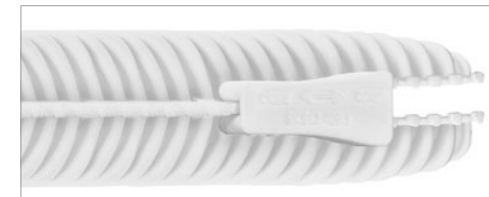
- Simple maintenance and inspection
- Cable-friendly with defined minimum bend radius
- No minimum order quantity
- 35% more cost-effective than usual "clean cable"
- IPA ISO Class 1 chainflex® cables with a 36-month guarantee: www.igus.eu/cleanroom-cables

Sustainability

- 99% material savings possible, as you can replace a cable without having to replace the entire system
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



e-skin® soft SKS - 32% lower clearance height than e-skin® SK28, page 22, with installation spaces from 135mm (e-skin® coloured here for demonstration purposes).



Reclosable opening mechanism: opening and closing with "zipper" function.



New interior separation system consisting of "tribo-optimised" iglidur® material for minimising abrasion.



Part No.	Inner height	Outer height	Inner width	Outer width	Bend radius***	Unsupported
SKS20*	20mm	25mm	33mm	50mm	≥ 040mm	upon request
SKS28**	28mm	40mm	68mm	95mm	≥ 055mm	≤ 0.7m
SKS40**	38mm	57mm	85mm	118mm	≥ 100mm	≤ 1.3m

***Note: the minimum bend radius is determined by the bottom of the e-skin® corrugated tube!

*Available from spring 2020 **Available from stock

Detailed product range online

1) Tested was e-skin® SKS28.068.02.1 including cables at $v_1 = 0.5\text{m/s}$, $v_2 = 1\text{m/s}$ and $v_3 = 2\text{m/s}$ or $a_1 = 1\text{m/s}^2$, $a_2 = 2\text{m/s}^2$, $a_3 = 4\text{m/s}^2$



... hybrid cleanroom-compatible corrugated tube ...

... e-skin® hybrid SKY combines the advantages of e-skin® SK and e-skin® soft SKF ...

Tech up

- 13% less clearance height than e-skin® SK28
- 28% longer unsupported length compared to SKS28 series
- Suitable for cleanrooms according to IPA ISO class 1¹⁾
- For fast, short, unsupported applications
- 5dB(A) quieter than usual "clean cable"
- Interior separation system consisting of "tribo-optimised" iglidur® material - to further minimise abrasion between the cables

Proof

- The igus® e-skin® SKY (e-skin® hybrid) is suitable for use in Class 1 cleanrooms according to ISO 14644-1. Tested by the IPA Fraunhofer Institute, Report IG 1907-1125¹⁾



Cost down

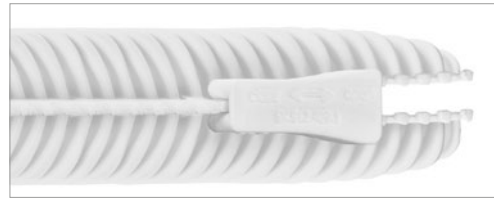
- Uncomplicated maintenance and inspection
- 17% more cost-effective than e-skin® SKS, page 24
- 35% more cost-effective than usual "clean cable"
- No minimum order quantity
- IPA ISO Class 1 chainflex® cables with a 36-month guarantee: www.igus.eu/cleanroom-cables

Sustainability

- 99% material savings possible, as you can replace a cable without having to replace the entire system
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



e-skin® hybrid SKY combines the advantages with less clearance height of the e-skin® SK series, page 22 and more unsupported length of the e-skin® soft SKS series, page 24 (e-skin® coloured here for demonstration purposes).



Reclosable opening mechanism: opening and closing with "zipper" function.



New interior separation system consisting of "tribo-optimised" iglidur® material for minimising abrasion.

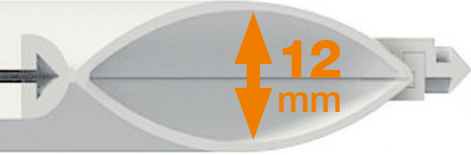
Part No.	Inner height	Outer height	Inner width	Outer width	Bend radius***	Unsupported
SKY28*	28mm	40mm	68mm	95mm	≥ 055mm	≤ 0.9m
SKY40*	38mm	57mm	85mm	118mm	≥ 100mm	≤ 1.4m

***Note: the minimum bend radius is determined by the bottom of the e-skin® corrugated tube!

*Available from spring 2020

Detailed product range online

1) Tested was e-skin® SKY28.068.02.1 at v₁ = 0.5m/s, v₂ = 1m/s and v₃ = 2m/s or a₁ = 1m/s², a₂ = 2m/s², a₃ = 4m/s²



... particle-free cable guidance ...

... e-skin® flat SKF single pods - cleanroom compatible and compact ...

Tech up

- Individual cable guide system
- 2 versions: fully enclosed and openable, available in 2 different inner heights
- Very compact structure
- 9dB(A) quieter than usual "clean cable"
- Optional with e-chain® for longer unsupported lengths, page 30
- Stackable, width-variable mounting brackets available

Proof

- The igus® e-skin® SKF (e-skin® flat) is suitable for use in Class 1 cleanrooms according to ISO 14644-1. Tested by the IPA Fraunhofer Institute, Report IG 1907-1125¹⁾



Cost down

- Fast cable filling
- Can be shortened or widened
- Flexible standard modular system, no special production
- No minimum order quantity
- 20% more cost-effective than usual "clean cable"
- IPA ISO Class 1 chainflex® cables with a 36-month guarantee: www.igus.eu/cleanroom-cables

Sustainability

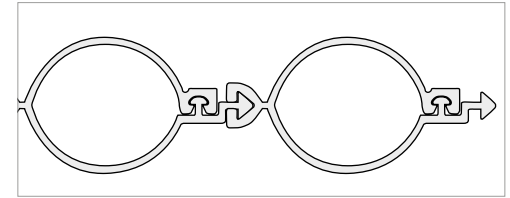
- 99% material savings possible, as you can replace a cable without having to replace the entire system
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



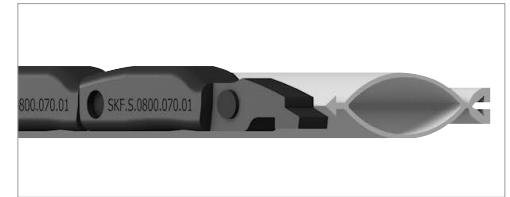
Individual modules with 1 cable chamber each can be connected to form wider systems.



Variable width e-skin® mounting brackets available on request. They can be stacked.



e-skin® flat single pod openable version with a special locking system available in 12mm inner height.



Optionally available as e-skin® flat with e-chain® SKF.S for even higher unsupported lengths.

Part No.	Inner height	Outer height	Number of chambers
Single pod profile - enclosed			
SKF12C*	12mm	13mm	2 - 6
SKF15C	15mm	16mm	2 - 6
Single pod profile - openable			
SKF120	12mm	13mm	2 - 6

*available as e-skin® flat with e-chain® SKF.S, page 30

Available from spring 2020

Detailed product range online

1) Tested was e-skin® SKF12.3.03.0101 at $v_1 = 0.5\text{m/s}$, $v_2 = 1\text{m/s}$ and $v_3 = 2\text{m/s}$ or $a_1 = 1\text{m/s}^2$, $a_2 = 2\text{m/s}^2$, $a_3 = 4\text{m/s}^2$



The e-skin® flat with e-chain® inserted in the e-skin® flat pod, thus no abrasion reaches to the outside (e-skin® flat with e-chain® visible for better clarity).



... particle-free, unsupported ...

... e-skin® flat with e-chain®: SKF.S - cleanroom compatible and compact ...

Tech up

- Unsupported travel distances with e-skin® flat SKF.S
- Defined bend radius for applications with e-skin® flat
- Profile for cleanroom applications with compact installation spaces
- e-skin® flat with e-chain® as enclosed solution to prevent abrasion
- Fast cable filling thanks to openability

Proof

- The igus® e-skin® SKF.S (e-skin® flat, identical as e-skin® SKF) is suitable for use in Class 1 cleanrooms according to ISO 14644-1. Tested by the IPA Fraunhofer Institute, Report IG 1907-1125¹⁾

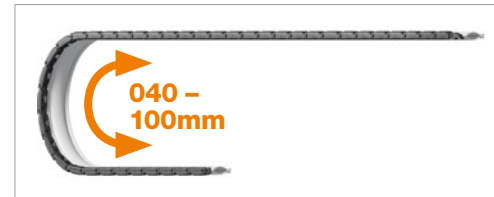


Cost down

- Individual cables can be replaced without replacing the whole energy supply system
- Can be shortened or widened
- No minimum order quantity
- Flexible standard modular system, no special production
- IPA ISO Class 1 chainflex® cables with a 36-month guarantee: www.igus.eu/cleanroom-cables

Sustainability

- 99% material savings possible, as you can replace a cable without having to replace the entire system
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



e-skin® flat SKF.S offers an unsupported length and a defined bend radius.



The e-skin® flat with e-chain® SKF.S for the enclosed single pod SKF12C (also suitable for the SKF12.X.03).



Variable width e-skin® mounting brackets available on request. They can be stacked.



e-skin® flat with enclosed e-chain® to avoid abrasion (e-skin® flat with e-chain® visible for better clarity).

Part No.	Outer height	Outer width	Bend radius
SKF.S.080.040.010**	8mm	8mm	040mm
SKF.S.080.070.010*	8mm	8mm	070mm
SKF.S.080.100.010**	8mm	8mm	100mm

*Available from spring 2020 **Available from summer 2020

Detailed product range online

1) Tested was e-skin® SKF12.3.03.0101 at $v_1 = 0.5\text{m/s}$, $v_2 = 1\text{m/s}$ and $v_3 = 2\text{m/s}$ or $a_1 = 1\text{m/s}^2$, $a_2 = 2\text{m/s}^2$, $a_3 = 4\text{m/s}^2$

DESIGN Study



... guide without interruptions ...

... e-spool® flex 2.0 - retractable supply of energy, data, air and liquids, without slip rings ...

Suitable for many industries and applications: panel extension on robot, cable retraction system for workshop, measuring and production areas.

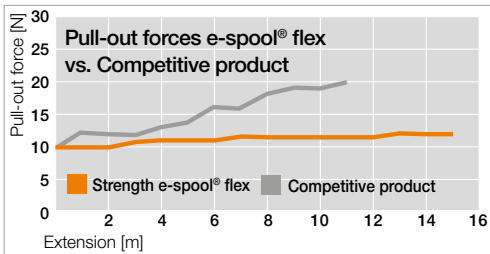
Tech up

- Without interruption (no slip ring), also for energy, data, fluids and air
- Space-saving
- Can be fitted universally
- Constant tensile strain on the cable
- Locking mechanism of the cable

Cost down

- Cost-effective
- Simple replacement of the used cable, therefore adaptable
- Four configurations adapted to the respective customer requirements

Proof

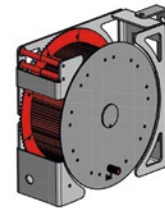


- Tested in the igus® laboratory: pull-out forces of e-spool® flex compared to competitor's product (cable diameter: 8mm)

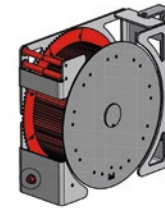
Sustainability

- No additional copper components in the system (apart from cable copper)
- Parts are reusable
- Less raw material required thanks to the option of partial repair instead of complete replacement
- Have your energy chain recycled as part of the igus® "chainge recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/chainge
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

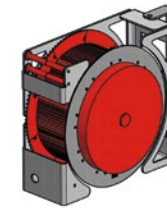
Four configuration levels - adapted to respective customer requirement - retract the cable with:



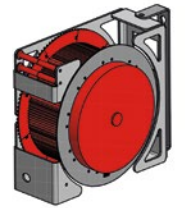
Version I: with a hand crank.



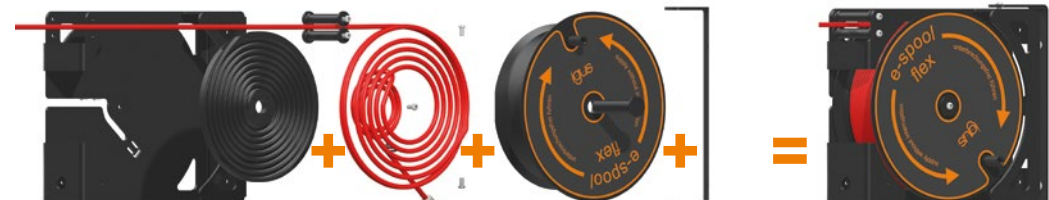
Version II: using a cordless screwdriver.



Version III: with retaining spring and locking mechanism.



Version IV: with retaining spring, locking mechanism and retraction brake.



The e-spool® flex 2.0 system is simple to set up, making it easy and quick to replace the cable if necessary.

Part No.	Cable diameter ϕ	Extension length
SPF.250.08.01.	from 5mm to 8mm	\leq 15m
SPF.250.11.01.	from 8mm to 11mm	\leq 10m
SPF.250.15.01.	from 11mm to 15mm	\leq 5m

Available upon request

Detailed product range online

DESIGN Study



ENERGY
DATA
AIR
LIQUIDS
GUIDANCE
IN ONE SYSTEM



Low-profile rotary module, without interruption

... CRM¹⁾ - the rotary module from the e-spool[®] flex series as an independent product - without slip ring ...

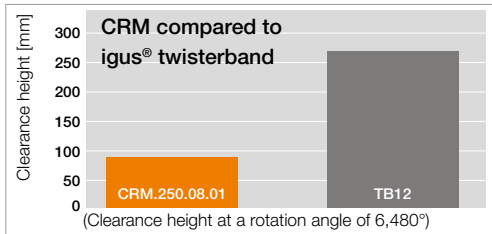
Tech up

- No slip ring: works with every kind of service (electricity, data, air or fluids)
- Can also be equipped with corrugated tubes
- Small installation space, very low profile
- Rotation angle up to 6,480° (depending on system)
- Resistant to water splashes due to uninterrupted guide

Cost down

- Cost-effective in case of repair (replacement of individual components possible)
- Adaptable to technological development due to simple replacement of the used cable

Proof



- Tested in the igus[®] laboratory: CRM¹⁾ compared to the igus[®] twisterband

Sustainability

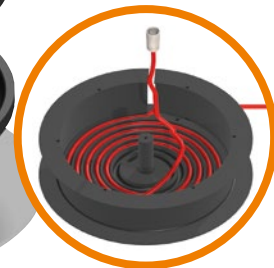
- No additional copper components in the system (apart from cable copper)
- Parts are reusable
- Less raw material required thanks to the option of partial repair instead of complete replacement
- Have your energy chain recycled as part of the igus[®] "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus[®] supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Suitable for many industries and applications:

general machine and plant construction, production systems, material handling, tool machines, industrial robots, medical technology, amusement parks, satellite telescopes, antennas.



Innovative guidance of any type of cable as well as corrugated tubes.



Part No.	Cable diameter ø	Angle of rotation
CRM.250.08.01	from 5mm to 8mm	6,480°
CRM.250.11.01	from 8mm to 11mm	4,320°
CRM.250.15.01	from 11mm to 15mm	2,160°

Available upon request

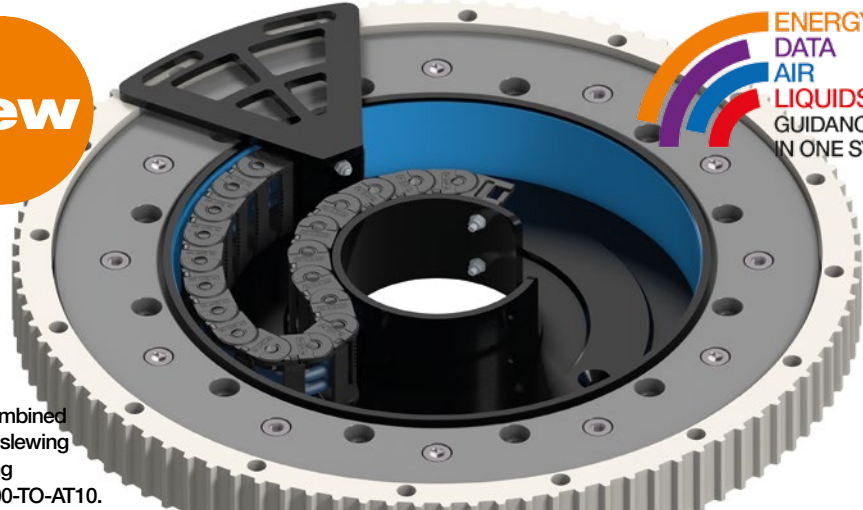
Detailed product range online

1) CRM = Compact Rotary Module

New

**ENERGY
DATA
AIR
LIQUIDS
GUIDANCE
IN ONE SYSTEM**

Can be combined with igus® slewing ring bearing PRT-01-200-TO-AT10.



... rotate cost-effectively in confined spaces

... RBR rotating energy supply 200P - complete system with plastic guide trough, 360° rotation angle ...

Rotating energy supplies from igus®

Download these design tips now

10 TIPS for your rotary applications

Rotating energy supply – the modular system for fast rotary applications

Moving energy made easy

For several years already, igus® has been developing customised systems for circular movements with energy chains, referred to as rotating energy supplies. As a result, rotating assemblies can be supplied with energy, data and liquids, for example, on machine tools, in the field of robotics and even in bucket wheel excavators. The igus® standard rotary modules consist of two circular guide elements. One part of the guide trough is attached to the static part of the system and the other part to the rotating part of the system. Because the rotary modules can be turned by both their inner or outer parts, the fixed end for the e-chains® can be chosen freely. In the main, e-chains® from the E4.1 series are used for "simple" applications and energy chains of the E2.1 and E2/000 series also for rotary modules.

The standard for circular movements

- Rotation angles up to 540° (on one level)
- Rotation angles of 90° and more are possible with the igus® Multi Rotation Modules
- Maximum angle of rotation in the smallest space
- Rotation speed up to 360°/s
- Lighter and more compact than static guide troughs
- Minimal displacement forces, maximum service life
- Modular construction with standardised mounting options
- Integrated strain relief and strain guidance through the guide trough
- No maintenance during energy supply

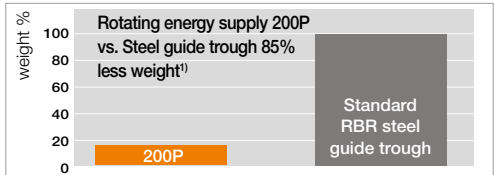
Tech up

- No slip ring: energy, data, air and liquids in ONE system
- Complete system with e-chain® moving arm and integrated strain relief
- Weight-saving -85% vs. steel guide trough¹⁾
- Protected against corrosion

Cost down

- 70% more cost-effective than a comparable steel guide trough¹⁾
- No project planning costs
- No minimum order quantity - cost-effective system price with no minimum order quantity
- Can be delivered pre-assembled - reducing on-site installation costs

Proof



● Tested in the igus® laboratory



● Tested in the igus® laboratory

¹⁾ Compared to RBR steel guide trough

Sustainability

- Production at only one location (3D printer)
- No need for sheet metal cutting, rolling, welding or galvanising/passivating
- Can be produced from recycling material
- Have your energy chain recycled as part of the igus® "chainge recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/chainge
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

igus® rotating energy supply systems online - the modular system for fast rotating applications

- Order rotary guide systems trough incl. e-chain® online
- Your options for igus® guide troughs
- Assembly video
- Further application examples of our customers
- Download 10 tips for a reliable rotating energy supply
- **More information:** www.igus.eu/RBR

You might also be interested in: 10 tips for a reliable rotating energy supply

Ten valuable tips for the correct guide trough for circular modules, should you want to design it yourself. Avoid mistakes that reduce the service life of your plant or might even cause downtime.

From the contents:

- Plan guide plates correctly
 - Tips for laying cables
 - Limit maximum rotation angle
 - Generate CAD data for troughs and entire modules
- Download 10 tips now free of charge.**

We will be happy to assist you at any time.

10

Design tips for long-lasting rotating energy supply ... with rotary energy chains

Available from summer 2020

Detailed product range online



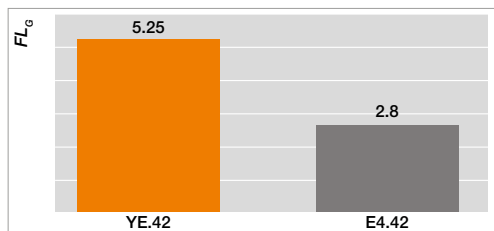
... safe and strong guidance ...

... YE plastic-steel hybrid e-chains® - strong, vibration-resistant, compact and easy to install ...

Tech up

- Almost 50% less weight¹⁾
- 50% longer unsupported length²⁾
- High tensile strength
- No screws, rivets or bolts which can become loose under vibration
- Tough: steel mounting brackets with attachment options from any side
- Smooth operation due to plastic pin connections
- Wide range of interior separation elements

Proof



- Tested in the igus® laboratory: 87.5% more unsupported length FL_g with 2kg/m fill weight²⁾

1) Than a pure steel chain of comparable size
2) Than a comparable plastic e-chain®

Cost down

- Easy installation - plastic outer links with flange for easy assembly of e-chain® links
- Available as ready-to-install readychain® system with cables, hoses and hydraulic components

Sustainability

- 30% less energy consumption in production compared to steel chain
- Have your energy chain recycled as part of the igus® "chainge recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/chainge
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



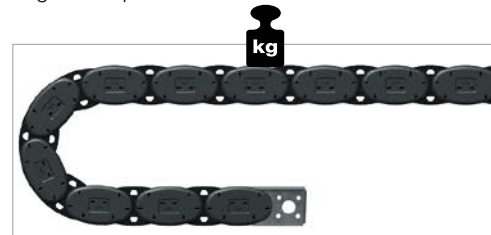
Almost 50% less weight - plastic outer links with high tensile force absorption through plastic pins¹⁾.



Steel inner plates absorb the force of the fixed stop dogs of the plastic outer links.



Robust steel mounting brackets and a wide range of elements for interior separation are available.



50% more unsupported length with compact dimensions with YE plastic-steel hybrid e-chains®.

Part No.	Inner height	Outer height	Inner width	Outer width	Bend radius	Pitch
YE.42	42mm	76mm	50 – 400mm	68 – 418mm	100mm	67mm
YE.56	56mm	90mm	50 – 600mm	74 – 624mm	150mm	91mm
YE.108	108mm	146mm	175 – 400mm	223 – 448mm	250mm	143mm

Available from summer 2020

[Detailed product range online](http://www.igus.eu)



Guarantee
igus chainflex
36
month guarantee



e-loop with crossbars every 2nd link - for a cable protection statically along the tower to the top drive. Less weight, lower price but also reduced protection of the cables.



e-loop accessories - rollers under the e-loop for easier movement on the ground.

... modular energy chain system ...

... e-loop - safe cable guidance for hanging applications ...

Tech up

- Modular system, easy to open
- No loose parts with optional screw lock
- Maximum cable/hose outer diameter up to 76mm or 500mm bend radius
- Protects against impact due to robust PU outer body
- Offers operational reliability due to secondary locking tension of all bolted connections
- Resistant to dirt
- Weather-resistant

Proof

- Permitted operating load of the plastic rope of 50kN
- Resistant to vibration and weather was tested in the laboratory
- Shock resistant and shatterproof
- Structure of the e-loop is "Drop Safe" due to double screw locking of the parts
- Protects against impact due to robust PU outer body
- Delivery time from 6 weeks

Cost down

- Simple maintenance
- Mounting brackets for easy and fast assembly
- All components are individually replaceable
- Cable-friendly 2-chamber design interior separation
- Failsafe cables with a 36-month guarantee

Sustainability

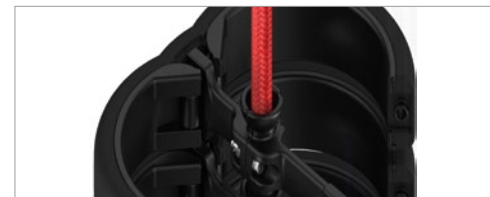
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



The interior consists of four injection moulded parts. Two of them form the crossbar in the chain link and are screwed on (captively). Due to being screwed connections, they are clamped onto the pull rope.



External protectors made of impact absorbing PU protector material ensure that the energy chain and the cables are protected when hard impacts occur.



The individual chain links are clamped onto the high-strength pull rope. The rope itself is a plastic-fibre rope and its permissible tensile load is 50kN.



The mounting brackets of the e-loop are high-strength steel mounting brackets. The plastic-fibre rope, which absorbs the entire tensile force of the e-loop, is an integral part of the brackets.

Part No.	Variation	Inner Ø	Outer Ø	Bend radius	Weight
ELP.220.01.D	200mm - dynamic, crossbars every link	150mm	220mm	380mm	≈ 18kg/m
ELP.220.01.S	200mm - static, with crossbars every 2 nd link	150mm	220mm	175mm	≈ 11kg/m
ELP.300.01.D	300mm - dynamic, crossbars every link	230mm	300mm	500mm	≈ 22kg/m
ELP.300.01.S	300mm - static, with crossbars every 2 nd link	230mm	300mm	210mm	≈ 13kg/m

Available from spring 2020

Detailed product range online



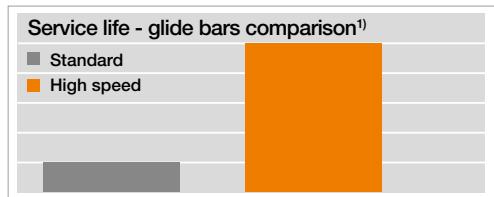
... for highest speeds ...

... HS glide bar - optimised for assembly and abrasion ...

Tech up

- Up to 5 times more abrasion-resistant due to tribologically optimised material¹⁾
- For particularly fast, gliding applications
- Short individual parts 500mm, easier handling
- New sizes available for many Aluminium SuperTroughs

Proof



- Abrasion tests, high-speed glide bar vs. conventional glide bar were carried out in the igus[®] lab¹⁾

Cost down

- More durable at the same price
- Significantly lower maintenance
- Assembly significantly easier due to 0.5m instead of 2m length
- Reduce construction effort with freely accessible configurator for CAD troughs

Predictive maintenance - optionally with the **isense** additional module: www.igus.eu/smartplastics

Sustainability

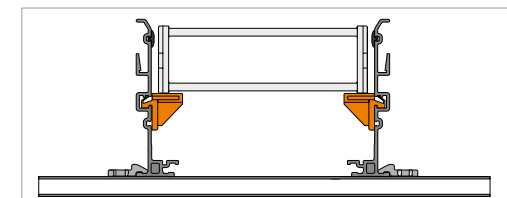
- 50% weight reduction by switching from extrusion to injection moulding
- Have your energy chain recycled as part of the igus[®] "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus[®] supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Energy supply even is more durable - easy to assemble, low-abrasion glide bar for extreme speeds.



Also with **isense EC.T**, the sensor for monitoring wear of the glide bar in guide troughs.



Abrasion-optimised igus[®] high-speed glide bar now in two new sizes for four Aluminium SuperTroughs.

Part No.	Aluminium SuperTrough
GB.21.09.500*	971.31.SLH
GB.21.09.500*	972.02.31.SLH
GB.21.09.500*	972.32.SLH
GB.21.13.500*	972.31.SLH

*Available from autumn 2020 **Available from stock

Part No.	Aluminium SuperTrough
GB.31.500**	973.31.SLH
GB.31.500**	974.31.SLH
GB.31.500**	975.31.SLH

Detailed product range online

¹⁾ High-speed glide bar compared to conventional glide bars



... strong, quick to install ...

... chainfix clamps - new sizes for cable diameters 42-46mm and 46-50mm ...

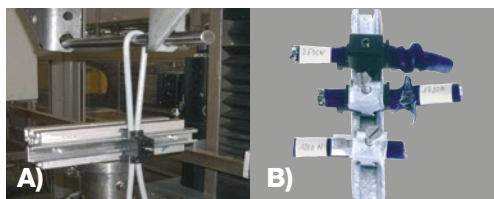
Tech up

- 3.5 x higher force absorption than standard clamps
- Painted steel or stainless steel
- For two different C-profile sizes
- CFX standard clamps with normal base and CFXL clamps with wide base for increased holding force available

Cost down

- Cost-effective standard component
- Easy to retrofit
- Cost-effective strain relief for large hose and cable diameters
- Space and time-saving assembly
- Assembly-friendly

Proof

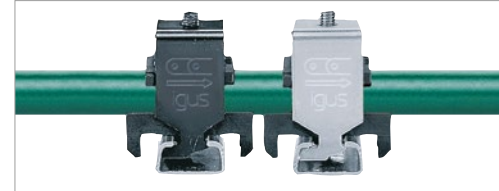


Tested in the igus® laboratory:

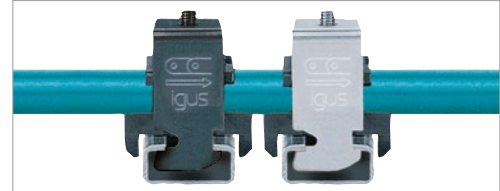
- A) Tensile strength test CFX clamps with stacker saddle
- B) Comparison test of 3 different strain relief systems. Conclusion: x3 tensile strength of igus® chainfix clamps when compared with conventional products

Sustainability

- Have your energy chain recycled as part of the igus® "chainge recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/chainge
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



CFX standard clamps with normal base - can be integrated in KMAs with C-profile mounting option.



Option: CFXL clamps with increased holding force, e.g. for heavy duty applications.



chainfix clamps - housing with reduced height.



Save time and space with igus® chainfix clamps.

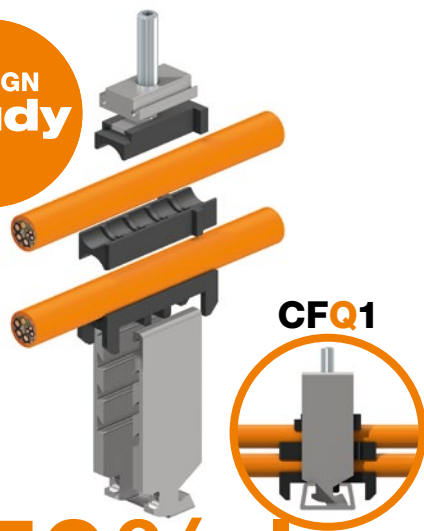
Part No. steel	Part No. stainless steel	Cable diameter ø	Outer width**	Outer height
CFX46.1*	CFX46.1.E*	42 - 46mm	51mm	110mm
CFXL46.1*	CFXL46.1.E*	42 - 46mm	51mm	110mm
CFX50.1*	CFX50.1.E*	46 - 50mm	55mm	115mm
CFXL50.1*	CFXL50.1.E*	46 - 50mm	55mm	115mm

**+ 2mm tolerance

*Available from spring 2020

Detailed product range online

DESIGN
Study

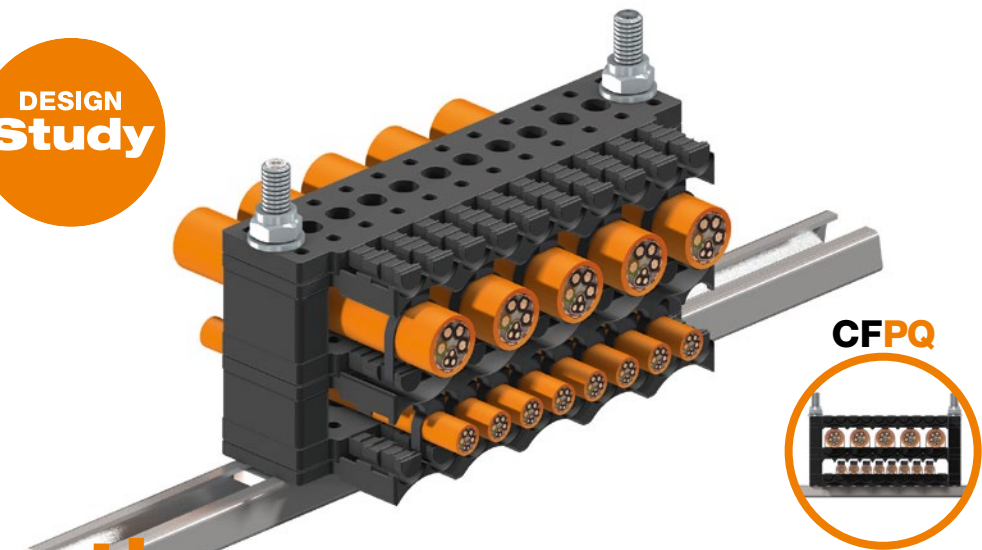


CFQ1



CFQ2

DESIGN
Study



CFPQ

... 50% less installation time¹⁾ ...

... CFQ - chainfix clamp "Quick-Design" ...

... CFPQ - chainfix plate "Quick-Design" ...

Tech up

- Easy to fill from above
- Intuitive design
- Modular system
- Tensile strength and holding force of the chainfix clamps that have been successfully used millions of times

Cost down

- 50% less installation time than conventional chainfix clamps

Proof



- Design study! Tech up & cost down are our development goals.¹⁾ Prototype tests in the igus® readychain® factory confirm that the goals can be reached

Sustainability

- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Available upon request

Tech up

- Redirection of the cable tiwrap during assembly
- Intuitive design
- Flexible modular system with stackable levels
- Proven tiwrap plate principle

Cost down

- 50% less assembly time than tiwrap plates

Proof



- Design study! Tech up & cost down are our development goals.¹⁾ Prototype tests in the igus® readychain® factory confirm that the goals can be reached

Sustainability

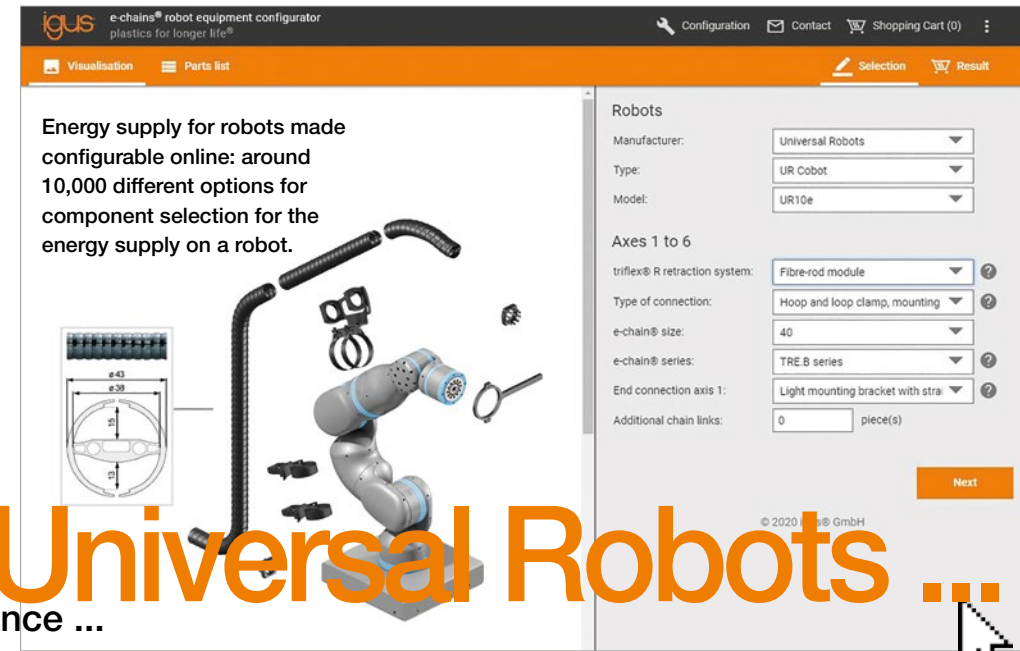
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- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Available upon request



... fibre-rod system on Universal Robots ...

... fibre-rod system for UR10 + UR10e for optimal cable guidance ...



Tech up

- Slotted holes allow infinite adjustment of the fibre-rod module
- Easy to retrofit
- Low wear by holding the e-chain® above the axis 4-6

Proof

- 2,500 fibre-rod modules have been assembled since 2018



Cost down

- Installation in minutes
- Less downtime, maintenance-free
- In only 8 clicks you get a complete solution using our online configurator

Sustainability

- Less abrasion ensures less fine dust
- Fired powder coating 100% emission-free (VOC free)
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

QuickRobot - the complete online equipment tool for robot accessories from igus®

Thanks to this selection tool for robot equipment, a complete system including cable guide systems can be specified from the available robot types. One can select either a full system or a system for an individual axis

- Choose your robot from a large number of models from well-known manufacturers
- Provides a full parts list, total price and expected delivery time for your configuration
- Easy transfer to the shopping cart, complete configuration or individual parts, no minimum order quantity
- Save, download or reset your individual configuration
- Creation of PDF reports for your configuration
- Also suitable for iPad
- More information: www.igus.eu/quickrobot



Further information on the online tool is available at: www.igus.eu/quickrobot





... cost-effective retraction system, linear ...

... TR.RSEL - new sizes TR.RSEL.60 and TR.RSEL.65 ...

Tech up

- Up to 380mm of retraction length
- Easy to retrofit
- Prevent loops on axes 4-6
- Optional guide plate behind retraction system minimises the e-chain® wear

Proof

- Tested in the igus® laboratory: resistance and retraction force of the rubber cords and wear of bearings and guides tested in the igus® laboratory. Test currently runs at 13,000 cycles per day



Cost down

- High running performance
- Less downtime, maintenance-free
- Modularised structure to the TR.RSEL.70 and TR.RSEL.85 retraction systems

Sustainability

- Individual wearing parts of the system are replaceable
- Baked-on powder coating 100% free of emissions (VOC free)
- Have your energy chain recycled as part of the igus® "chainge recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/chainge
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

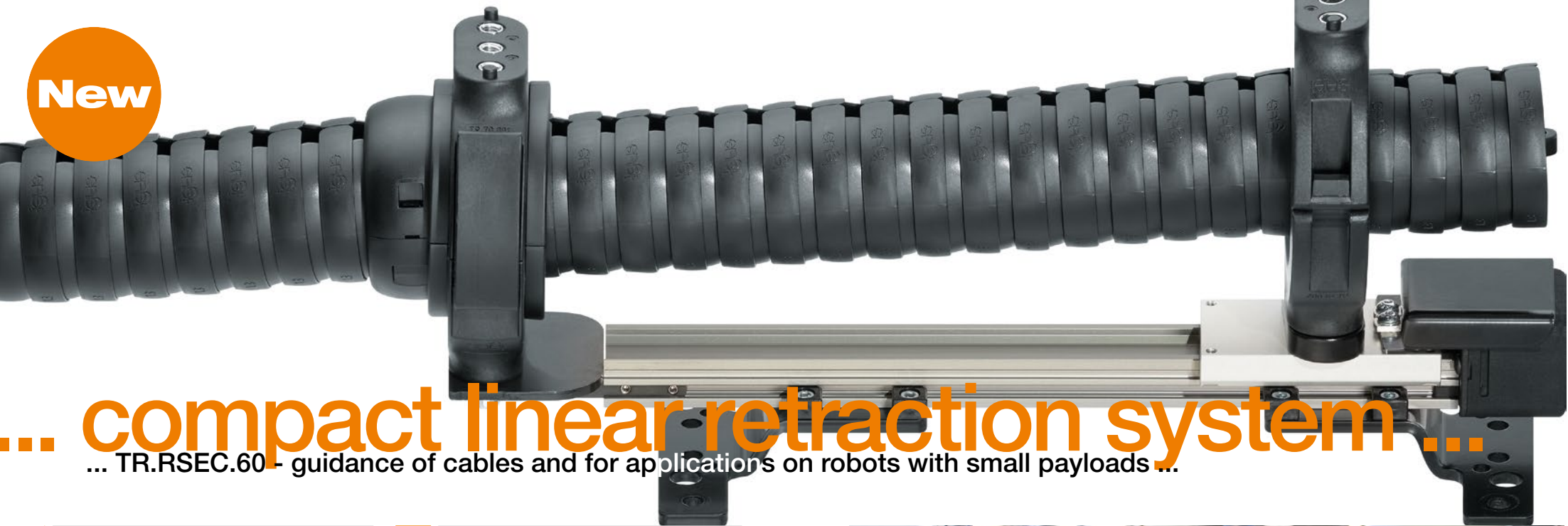


The new RSEL retraction system - modular and even more cost-effective

Part No.	Retraction length	System length	System height
TR.RSEL.60*	380mm	856mm	217mm
TR.RSEL.65*	380mm	856mm	217mm
TR.RSEL.70**	380mm	856mm	239mm
TR.RSEL.85**	380mm	856mm	251mm

*Available from spring 2020 **Available from stock

Detailed product range online



... compact linear retraction system ...

... TR.RSEC.60 - guidance of cables and for applications on robots with small payloads ...

Tech up

- System weight of only 2.2kg
- Up to 290mm of retraction length
- Easy to retrofit
- Prevent loops on axes 4-6
- Fixed end of the e-chain® can be freely placed due to the linear design

Proof

- Tested in the igus® laboratory: resistance and retraction force of the rubber cords and wear of bearings and guides tested in the igus® laboratory. Test currently runs at 13,000 cycles per day

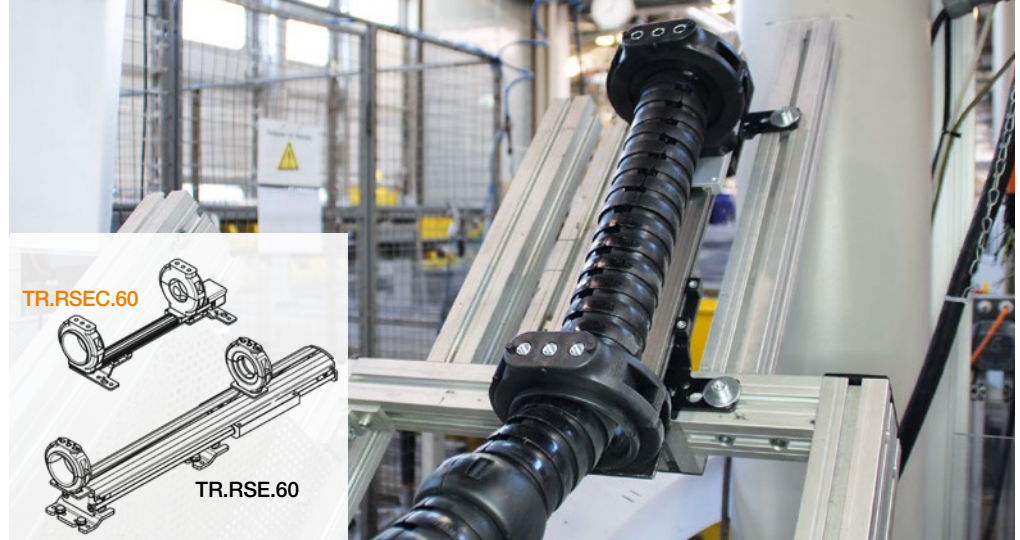


Cost down

- High running performance
- 40% less expensive compared to TR.RSE.60 retraction system
- Less downtime, maintenance-free
- Modularised structure to TR.RSE.40 and TR.RSE.50 retraction systems

Sustainability

- Weight advantage of 78% compared to the conventional TR.RSE.60 retraction system. Less moving mass and energy consumption
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



TR.RSEC.60 is 45% more compact than the standard TR.RSE.60 retraction system.

Part No.	Retraction length	System length	System height
TR.RSEC.60*	290mm	467mm	179mm

*Available from spring 2020

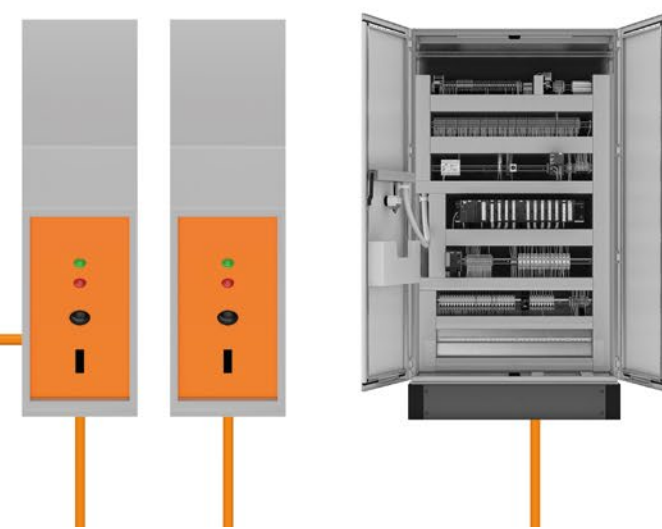
Detailed product range online

New



... protect travels up to 1,000m ...

... EC.PR ... avoid unscheduled machine downtime ...



Tech up

- Position-dependent reduction of maximum push/pull force limits at which the system is shut down - freely defined for each point along the travel
- Position information via additional modules from Siemens SPS, OPC-UA servers, analogue or digital travel measuring systems

Proof

- Tested at 200m test facility in the world's largest laboratory for dynamic energy transmission systems: www.igus.eu/test200

Cost down

- Avoid unplanned repair cost e.g. at a stacker reclaimer of €40,000* and more for a replacement
- Integration into existing control systems and switch cabinets
- Standard strain gauge sensors and load cells can be used in igus® floating moving ends

Sustainability

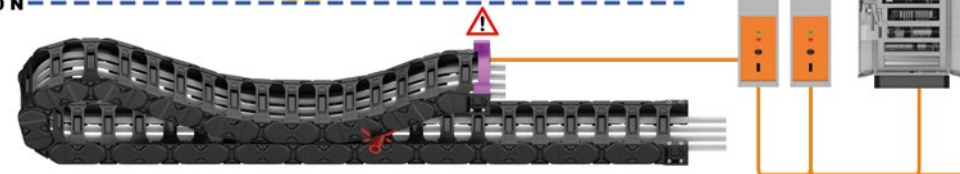
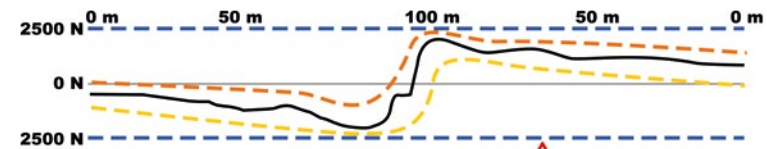
- For example, reduces CO² emissions by 32kg for each eliminated repair work**
- Reduces raw material required thanks to the option of partial repair instead of complete replacement
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Potential application areas

- Long travels, and 150m project applications
- Stacker reclaimers
- Automatic cranes



■ static force limits
■ upper dynamic force limit
■ lower dynamic force limit
■ measured force



* igus® application at Tata Steel in Haldia, India with a travel of 480m and a chain length of 240m was able to avoid a replacement worth about €40,000
 *** Randomly chosen Mercedes vehicle built in 2015 with 160 grams of CO²/km at randomly defined 100km arrival/departure

Delivery time for BETA test projects: 14 days

New



... trough-integrated travel measuring system

... EC.PP ... provides position data ... for the EC.PR ...

Tech up

- Travel measuring system for connection to position-dependent push/pull force measurement EC.P
- Can be used as main system for trolley positioning - a second measuring system is not necessary
- No additional rotation monitor necessary: beacons transmit position information to the moving antenna
- Transmission of position data to customer PLC control via Profinet
- Repeat accuracy: +/-5mm

Proof

- Demonstrably tested by BTG (expert for crane positioning systems)
- Q2 2020: test set-up at 200m test facility in the igus® laboratory for dynamic energy transmission systems, the world's largest

Cost down

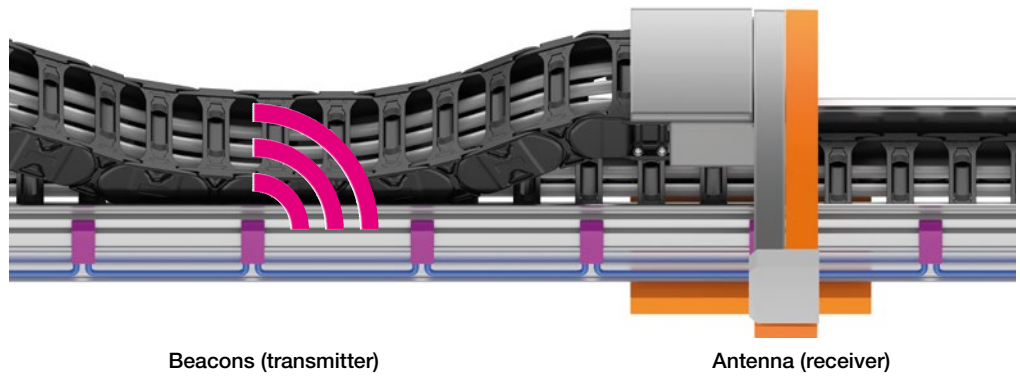
- Average of four man-days of installation time saved because the second measurement system is eliminated*

Sustainability

- Faster decommissioning of uneconomic technologies due to saved installation time
- Have your energy chain recycled as part of the igus® "chainge recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/chainge
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Potential application areas

- Ship-to-shore cranes, especially in automatic mode
- Bulk material handling
- Stacker reclaimers
- Applications in heavy industry, e.g. steel mills



* E-mail of 9/4/2020 from the CEO of a well-known manufacturer of position measuring systems on crane systems

First BETA test projects Q2/2020 - regular sales mid-Q3/2020

New

igus

... online service life monitoring ...

... EC.W.06 ... crossbar with integrated IoT Cloud connection ...

Tech up

- Integrated LTE modem stores abrasion and movement data directly in the cloud
- No additional hardware necessary
- Wear and replacement recommendations in the web dashboard, via e-mail/SMS
- Four times more precise than EC.W.04*

Proof

- Ongoing test series in the igus® test laboratory for dynamic energy transfer systems, the largest in the world

Cost down

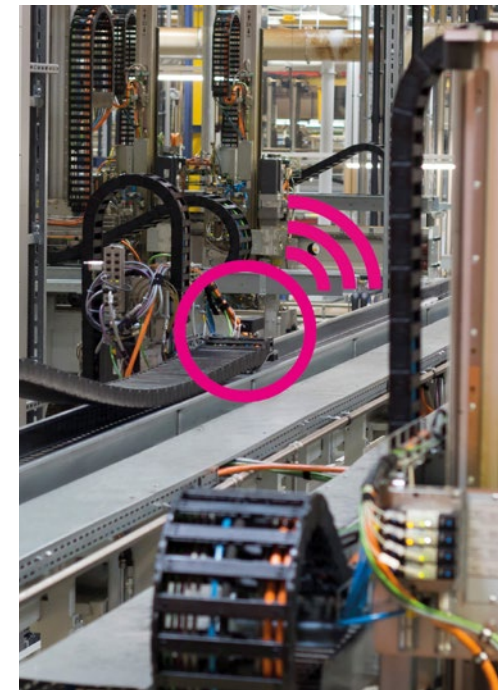
- No additional hardware needed in the switch cabinet - for example, €1,169 is the list price for an icom online module
- In-house hardware development allows a price of less than €400/crossbar
- Avoid unplanned system downtime - for example, about €600,000 for 10hrs of downtime in the automotive industry**

Sustainability

- Unplanned service deployments can be prevented - eliminating 100km of travel saves about 3.6kg of CO₂***
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Potential application areas

- Interlinking portal in manufacturing companies
- Robot travel axes
- Applications with long travels in the logistics industry
- Process cranes



* Four instead of one sensor layer

** One minute of line stoppage in automobile manufacture costs between €1,000 and €6,000

*** Randomly chosen Mercedes vehicle built in 2015 with 160 grams of CO₂/km at randomly defined 100km arrival/departure

Envisaged for Q3/2020



... service life monitoring ...

... EC.I.SU.02 ... integrated offline service life monitoring for unsupported e-chain systems® ...

Tech up

- New sensors allow measurement of percentage pin/bore connection abrasion levels
- Designed especially for unsupported and roller chain applications
- Transmission of sensor and dynamic data via a newly developed LoRa module to the icom.plus offline module
- Energy-efficient communication concepts allow years of battery life
- Optional "Energy Harvesting"

Proof

- Current test set-up in the igus® test laboratory for dynamic energy transfer systems, the largest in the world



Cost down

- Cost reduction through clear measurement of the service life of the product - avoidance of an early replacement of the e-chain system®
- icom.plus integration enables the use of established systems
- Output of service life information and warnings via HMI systems or the local network

Sustainability

- Avoid emergency operations or premature replacement by knowing the maximum product service life
- Have your energy chain recycled as part of the igus® "change recycling program" at the end of its life cycle. Irrespective of the manufacturer. You can receive a voucher: www.igus.eu/change
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Potential application areas

- Unsupported e-chain systems® in machine tools, woodworking machines, semiconductor production, and logistics
- Gliding e-chain systems® with igus® roller chains in cranes for bulk handling



Q2/2020 for the series 2500 & E4.32 | Q3/2020 for the series E4/P4

new



72

Ethernet cable with 300V UL voltage, no separator required



76

CF34.UL.D and CF35.UL TPE motor cables for higher cable temperature according to UL



78

DriveCliqu cables for extremely small radii and long travels with 300V UL voltage



80

New generation of control cables with TPE core insulation saves 20% installation space



82

Save 84% shipping cost with chainflex® CASE for shipping and storing cable on drums



84

Continuous ethernet communication with the slim Single Pair Ethernet cable

84 highlight 2020

Single Pair Ethernet



Continuous ethernet communication with the slim Single Pair Ethernet cable



86

High-end data cables CF298 and CF299 for small radii, 100% more double strokes guaranteed



88

Motor cable CFROBOT7 optimised for ±180°/m on robots



90

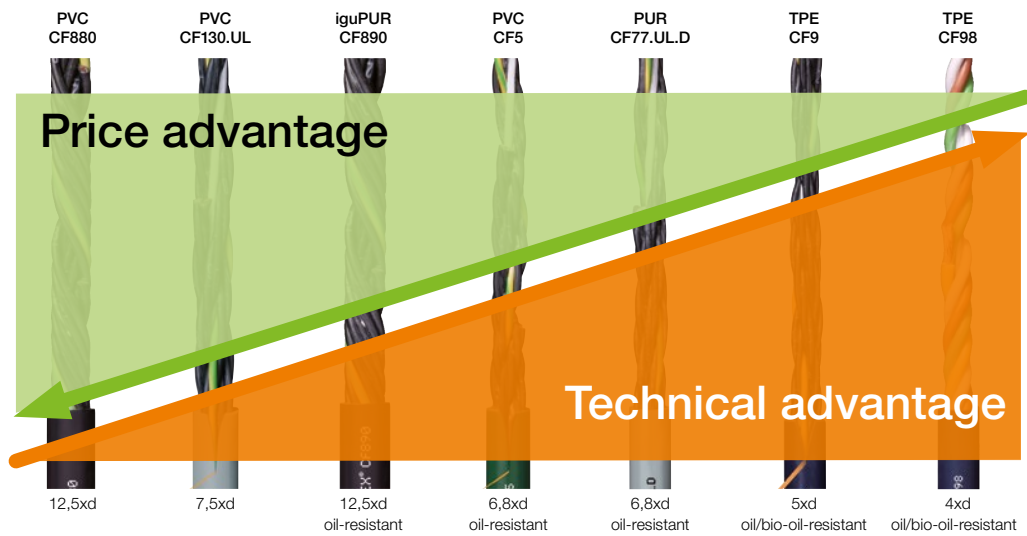
Very cost-effective servo cable CF887 for a guaranteed 5 million double strokes in e-chains®

Tech up, Cost down. It's our job.

Moving energy made easy ...

chainflex

... cables



cost down...



...life up

Cost down ... life up ... online price check

... save cost with every kind of cable ...

Reduce cost and/or prolong the service life of your application with the chainflex® price check

For every type of cable, no matter whether control, bus cables or cables for drive technology such as servo or measuring system cables, we can offer you a wide range of different mechanical qualities. From an electrical point of view, these cables are always identical and interchangeable. For our customers this means that we will always provide you with the most cost-effective cable that works reliably in your application.

Check prices now and send us your current cable list online. We will check immediately to see where we can reduce your costs and/or further increase the service life of your application. There is no risk for you as all the cables come with a clear service life guarantee.

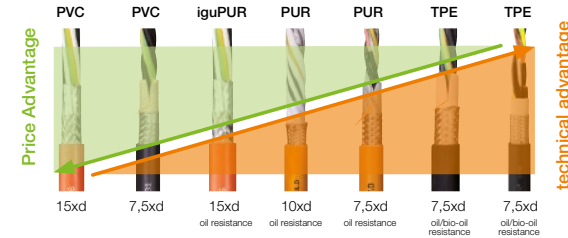
Between the best price and the best technology, you can find many other cable qualities. We can therefore always offer you the very best price/performance ratio for your application, depending on the requirements: with/without oil, long/short travel, large/small bend radius, etc. All cables tested in the chainflex® laboratory and with a 36-month guarantee.

Price check briefly explained with example at the top left

For a control cable (4x0.5mm²) you can obtain very cost-effective a CF880 cable made of PVC with a guarantee. This means a maximum saving but very little risk. By contract, for extremely small radii and a very long service life, the CF98 offers the greatest technical advantage of the chainflex® control cables.

Two examples of possible cost savings:

Motor cables

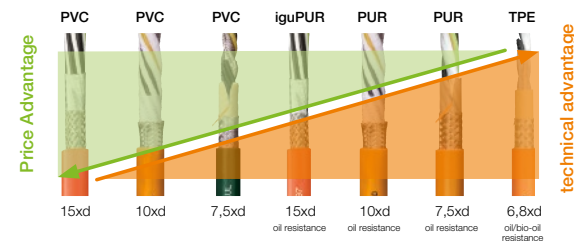


- CF34.UL.100.04.D 19.85 €/m
- 1 x CFPE.100.01 3.43 €/m
- + 1 x CF300.UL100.01.D 2.71 €/m
- + 1 x CF300.UL100.01.D 2.71 €/m
- = 11.56 €/m

► Using single cores:

-41.8%

Servo cables



- CF27.25.15.02.01.D 13.80 €/m
- CF21.25.15.02.01.UL 9.29 €/m

► Reduction from PUR:

-32.7%



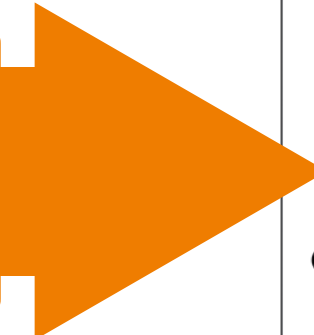
3,800m²
test laboratory



250 million cycles in
batch tests per year



36-month
guarantee



**igus 36-month
chainflex cable
guarantee and
service life
calculator based
on 2 billion test
cycles per year**



... UL verified ...

... qualified monitoring of laboratory & manufacturing with UL ...

Tech up

- Qualified cables
- Reliable: thanks to a neutral third-party test institution

Cost down

- Dependability for the tested cables

Proof


- Comprehensive audit of the company UL with confirmation of qualification.



Sustainability

- Online calculations eliminates the need for costly field testing
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

WHITE PAPER:
 Why "trust is good, but evidence is better" takes on a whole new significance.
 How the bar is raised for brand promises with the label "UL verified marketing claim".
www.igus.eu/ul-verified






...at home across
... chainflex® approvals ...



▲ Tech up

- One cable for all major markets
- Gives confidence in the design process
- Elimination of costly, time-consuming overall approvals

▼ Cost down

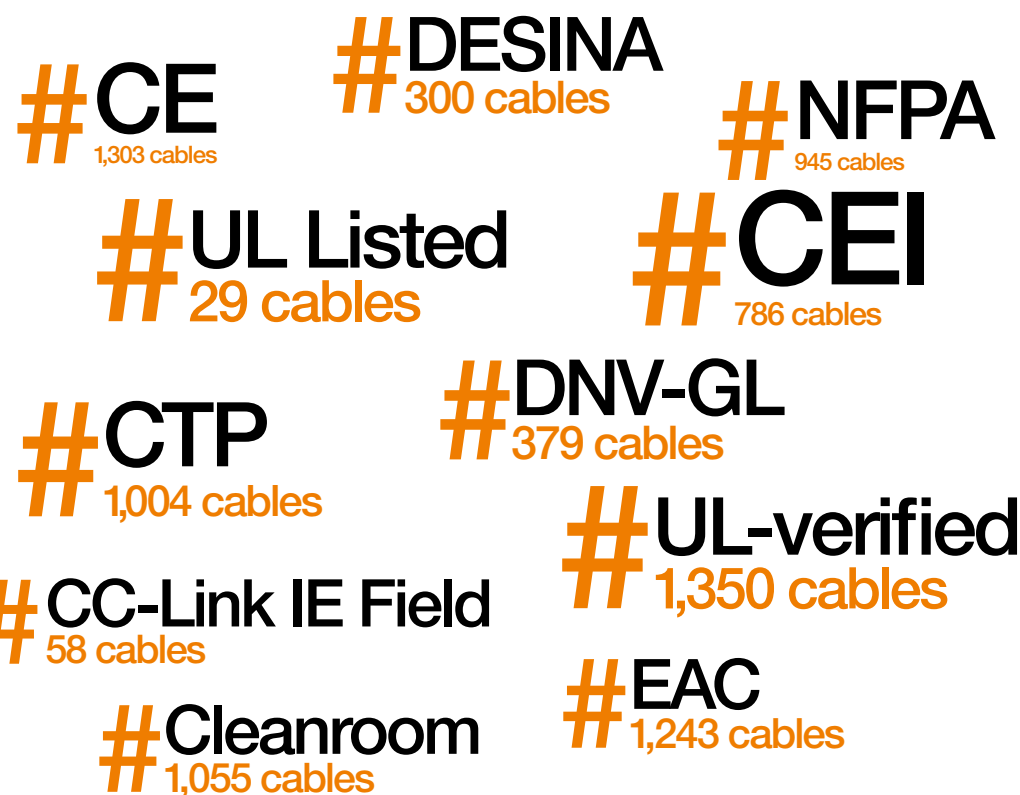
- No duplicated stock
- No additional costs in respect of customs duty
- Smooth passage through customs
- Simple scheduling system

■ Proof



● Sustainability

- No duplicated stock
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil





...Cables for the maritime sector ...

Tech up

- Safety with defined materials for the maritime sector
- Clear indication of durability in moving applications

Cost down

- Minimisation of the risk of failure

Proof

- Comprehensive audit of the company DNV-GL with unrestricted certification



Sustainability

- Allows a high degree of automation for the maritime industry
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

WHITE PAPER:
More automation in the offshore industry and the maritime sector.
 Be one step ahead with successful DNV-GL certification.
www.igus.eu/dnv-gl

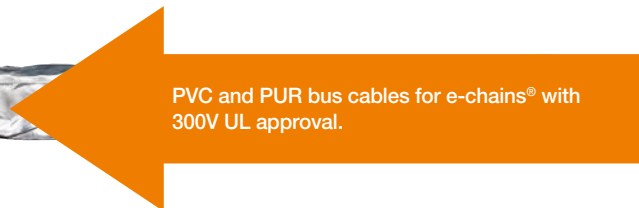


igus® chainflex® CF888.045

igus® chainflex® CFBUS.PVC.049

igus® chainflex® CF889.045

igus® chainflex® CFBUS.PUR.045



...Bus cables 300V UL approval

... more options for interior separation ...



Tech up

- UL voltage of 30V increased to 300V
- Can be laid directly next to cables with the same voltage level
- Two bend radii
- All common bus types (such as Ethernet, Profinet, Ethercat, etc.)
- Reliably design cable service life online: www.igus.eu/chainflexlife

Proof

- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 5064, 17 million strokes

Cost down

- Eliminates the need for additional separating elements between the cables in the chain®, reducing costs by €2.10/m
- From four cable qualities, always find the most cost-effective bus cable that is guaranteed to work in e-chains®
- 36-month guarantee

Sustainability

- Saves resources thanks to predictable service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Bus	Series	R min. e-chain®	chainflex® types from stock
PVC	CF888	15xd	4
PVC	CFBUS.PVC	12.5xd	13
iguPUR	CF889	15xd	6
PUR	CFBUS.PUR	12.5xd	16

Detailed information for guaranteed service life of this cable can be found in the latest chainflex® catalogue.

cost down...

Do the chainflex® price check now for your bus cables: from a selection of seven qualities, we will find the most cost-effective cable that is guaranteed to work in your application. More information on the chainflex® price check on page 64.

Bus cables UL listed and/or with UL certification in six qualities from stock.

Simulate, configure and calculate online: chainflex® product finder, chainflex® service life calculator

Available from stock



TPE bus cable for very heavy duty, available immediately with 600V UL certification. Tested and with guaranteed service life.

... High-end bus cable with 600V UL ...

... for heaviest duty applications in e-chains® ...

Tech up

- UL voltage of 300V doubled to 600V
- Can be laid directly next to cables with the same voltage level
- Reliably design cable service life online: www.igus.eu/chainflexlife

Cost down

- Eliminates the need for additional separating elements between the cables in the chain®, reducing costs by €2.10/m
- 36-month guarantee

Proof

- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 3089, 77 million strokes

Sustainability

- Saves resources thanks to predictable service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Simulate, configure and calculate online: [chainflex® product finder](#), [chainflex® service life calculator](#)

Bus	Part No.	R min. e-chain®	Number of cores and conductor nominal cross section [mm ²]	Outer Ø approx. [mm]	Copper index [kg/km]	Weight [kg/km]
CAT5	CFBUS.040	10xd	(4x0.25)C	7	33	64
CAT5e	CFBUS.045	10xd	(4x(2x0.15))C	8.5	41	86
CAT6	CFBUS.049	10xd	(4x(2x0.15))C	8.5	42	86
CAT6A	CFBUS.050	12.5xd	(4x(2x0.15))C	10.5	82	135
CAT7	CFBUS.052	12.5xd	(4x(2x0.15))C	10.5	89	137
Profinet	CFBUS.060	10xd	(4x0.38)C	7.5	39	73

Detailed information for guaranteed service life of this cable can be found in the latest chainflex® catalogue.

cost down...

...life up

Do the chainflex® price check now for your bus cables: from a selection of seven qualities, we will find the most cost-effective cable that is guaranteed to work in your application. More information on the chainflex® price check on page 64.



More than 700 Ethernet cables, harnessed and ready to connect, available as [readycable®](#). Made exactly to the right length without any waste, 100% tested.

Available from stock

CF34.UL.D TPE motor cable

igus® chainflex® CF34.UL.D



CF35.UL TPE motor cable, shielded

igus® chainflex® CF35.UL



Guarantee
igus chainflex
36
month guarantee

TPE motor cables with higher temperature certification for UL thanks to new core insulation.



... higher temperature resistance ...

... core insulation UL 90°C ...

Tech up

- 12.5% improved temperature stability with higher UL temperature
- 30% lower permittivity than motor cables with PVC insulation
- Reliably design cable service life online:
www.igus.eu/chainflexlife

Proof

- UL style 22022/22021
- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 5299, 14 million strokes

Cost down

- Allows smaller installation spaces
- 36-month guarantee

Sustainability

- Low-capacitance cables lead to reduced compensations in frequency converters given the same level of efficiency for the entire drive unit
- Saves resources thanks to predictable service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Simulate, configure and calculate online:
[chainflex® product finder](#), [chainflex® service life calculator](#)

Available from stock

Part No.	R min e-chain®	Number of cores and conductor nominal cross section [mm²]	Outer Ø approx. [mm]	Copper index [kg/km]	Weight [kg/km]
CF34.UL.15.04.D	7.5xd	4G1.5	8.5	61	109
CF34.UL.25.04.D	7.5xd	4G2.5	10.5	100	166
CF34.UL.40.04.D	7.5xd	4G4.0	12	163	244
CF34.UL.60.04.D	7.5xd	4G6.0	14	237	344
CF34.UL.60.05.D	7.5xd	5G6.0	15.5	297	420
CF34.UL.100.04.D	7.5xd	4G10	17	407	540
CF34.UL.100.05.D	7.5xd	5G10	19.5	510	683
CF34.UL.160.04.D	7.5xd	4G16	20.5	646	819
CF34.UL.160.05.D	7.5xd	5G16	23	813	1,039
CF34.UL.250.04.D	7.5xd	4G25	25	1,014	1,268
CF34.UL.100.04.O.PE.D	7.5xd	4x10	17	407	540
CF34.UL.160.04.O.PE.D	7.5xd	4x16	20.5	646	819
CF35.UL.05.04	7.5xd	(4G0.5)C	8	42	86
CF35.UL.07.04	7.5xd	(4G0.75)C	8.5	58	107
CF35.UL.15.04	7.5xd	(4G1.5)C	10	89	153
CF35.UL.25.04	7.5xd	(4G2.5)C	11.5	133	214
CF35.UL.40.04	7.5xd	(4G4.0)C	13.5	209	327
CF35.UL.60.04	7.5xd	(4G6.0)C	16	305	461
CF35.UL.100.04	7.5xd	(4G10)C	19.5	468	689
CF35.UL.160.04	7.5xd	(4G16)C	23	740	1,025
CF35.UL.250.04	7.5xd	(4G25)C	28	1,181	1,544
CF35.UL.60.03.O.PE	7.5xd	(3x6.0)C	15.5	239	370
CF35.UL.250.03.O.PE	7.5xd	(3x25)C	25	902	1,228
CF35.UL.350.03.O.PE	7.5xd	(3x35)C	28.5	1,222	1,701
CF35.UL.500.03.O.PE	7.5xd	(3x50)C	33.5	1,714	2,234

igus® chainflex® CF113.028.D



DriveCliqu cable ... 300V UL certification

... extremely durable and suitable for long travels ...

Tech up

- UL voltage of 30V increased to 300V
- Can be laid directly next to cables with the same voltage level
- Extremely small bend radii and long travels
- Reliably design cable service life online:
www.igus.eu/chainflexlife

Cost down

- Eliminates the need for additional separating elements between the cables in the chain®, reducing costs by €2.10/m
- 36-month guarantee
- Of seven cable qualities, always find the most cost-effective DriveCliqu cable that is guaranteed to work

Proof

- UL style 22022/22021
- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 4692, 32 million strokes

Sustainability

- Saves resources thanks to predictable service life
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Simulate, configure and calculate online:
chainflex® product finder, chainflex® service life calculator

Jacket	Part No.	R min e-chain®	Number of cores and conductor nominal cross section [mm ²]	Outer Ø approx. [mm]	Copper index [kg/km]	Weight [kg/km]
PVC	CF884.028	15xd	(2x(2x0.15)+(2x0.38))C	7.5	41	41
PVC	CF211.028	10xd	(2x(2x0.15)+(2x0.38))C	7.5	35	35
iguPUR	CF894.028	15xd	(2x(2x0.15)+(2x0.38))C	7.5	41	41
PUR	CF111.028.D	10xd	(2x(2x0.15)+(2x0.38))C	7.5	35	35
PUR	CF113.028.D	7.5xd	(2x(2x0.20)+(2x0.38))C	7.5	44	44
TPE	CF11.028.D	7.5xd	(2x(2x0.20)+(2x0.38))C	7.5	44	44
PUR	CFROBOT4.028	10xd	(2x(2x0.20)+(2x0.38))C	7.5	44	44

Detailed information for guaranteed service life of this cable can be found in the latest chainflex® catalogue.

cost down...



Do the chainflex® price check now for your DriveCliqu cables: from a selection of seven qualities, we will find the most cost-effective cable that is guaranteed to work in your application. More information on the chainflex® price check on page 64.

Also available as ready-to-connect readycable®:

Made exactly to the right length without any waste, 100% tested.
35 cables from stock.



Available from stock

igus® chainflex® CF880

CF881 PVC control cable, shielded

igus® chainflex® CF881

CF890 iguPUR control cable

igus® chainflex® CF890

CF891 iguPUR control cable, shielded

igus® chainflex® CF891

Guarantee
igus chainflex
36
month guarantee



Very cost-effective control cables with up to 20% smaller outer diameters.

... save 20% design space ...

... new generation of control cables with TPE core insulation ...



Tech up

- Greater current carrying capacity (+16% more) thanks to improved core insulation
- New generation with up to 20% smaller outer diameter
- Smaller bend radii (up to 21%)
- Reliably design cable service life online:
www.igus.eu/chainflexlife

Cost down

- Save 20% of installation space, allowing smaller e-chain® designs
- Cost reduced by up to 50% thanks to cross-section reduction potential
- 36-month guarantee

Proof

- UL style 2464/20940
- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 5289, 15 million strokes

Sustainability

- Reduced material usage (up to 35% less) for cable manufacture
- 13% less energy required for movement
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Jacket	Series	R min e-chain®	Shield	Conductor nominal cross section [mm²]
PVC	CF880	12.5xd	–	0.5-2.5
PVC	CF881	12.5xd	✓	0.5-2.5
iguPUR	CF890	12.5xd	–	0.5-2.5
iguPUR	CF891	12.5xd	✓	0.5-2.5

Detailed information for guaranteed service life of this cable can be found in the latest chainflex® catalogue.

cost down...



...life up

Do the chainflex® price check for your control cables now: from a selection of seven qualities, we will find the most cost-effective cable that is guaranteed to work in your application. More information on the chainflex® price check on page 64.



Simulate, configure and calculate online:
chainflex® product finder, chainflex® service life calculator

Available from stock



- Shipment without a pallet
- Removal from reel without a frame
- Re-order online

igus	igus GmbH Spicher Str. 1a 51147 Köln/Germany	chainflex cable works
Artikel/Article:	CF880.15.03	Einfach bestellen/Easy to order:
Bezeichnung/Description:	chainflex PVC Steuer-Ltg. 3G1,5	
Länge/Length:	100m	

Save 84% shipping costs ...

... chainflex® CASE - ship'n store by igus® for shipping and storing goods on reels ...

Tech up

- The label with QR code to the product page makes re-ordering 60% faster
- Simple unreeling directly from the box
- Simple storage – stack up to three boxes directly at the place of use

Cost down

- 84% more cost-effective with standard shipment
- Delivery within 1-2 business days with standard shipment
- No storage system or drum unreeler necessary


Proof

- Online cost comparison: €3.20 with standard shipment vs. €20.00 with a haulage company

Sustainability

- Standard shipment conserves resources
- Manufactured from reusable materials



 Available from stock



CFBUS.PUR.042 Single Pair Ethernet cable

Single Pair Ethernet



Single Pair Ethernet cable for reduction of weight and necessary space - for smart industrial automation.

-25%

Standard Ethernet

Single Pair Ethernet



Guarantee
igus chainflex
36
month guarantee

... Single Pair Ethernet ... for e-chains®

... cable for Industry 4.0 applications ...

Tech up

- This allows continuous Ethernet communication, including the "last metre" (from the control cabinet to the machine)
- Cable 25% thinner than that of CAT5e at the same data transmission rate
- Reliably design cable service life online:
www.igus.eu/chainflexlife

Cost down

- Installation spaces that are 25% smaller than CFBUS.PUR.045 are possible
- Cost is 20% lower than those of a four-paired CAT5e cable (CFBUS.PUR.045)
- 36-month guarantee

Proof

- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 3089, 77 million strokes
- Member of the SPE Network

Sustainability

- Reduced material usage (46% less) for cable manufacture
- Energy consumption for moving applications 50% less than that of CFBUS.PUR.045



Simulate, configure and calculate online:
chainflex® product finder, chainflex® service life calculator

Bus	Part No.	R min e-chain®	Number of cores and conductor nominal cross section [mm ²]	Outer Ø approx. [mm]	Copper index [kg/km]	Weight [kg/km]
CAT5	CFBUS.PUR.040	12.5xd	(4x0.25)C	6.5	29	67
SPE	CFBUS.PUR.042	12.5xd	(2x0.15)C	5.5	12	33
CAT5e	CFBUS.PUR.045	12.5xd	(4x(2x0.15))C	7.5	33	66
CAT6	CFBUS.PUR.049	12.5xd	(4x(2x0.15))C	7.5	34	66
CAT6 _A	CFBUS.PUR.050	12.5xd	4x(2x0.20)C	9.5	65	118
CAT7	CFBUS.PUR.052	12.5xd	(4x(2x0.15)C)C	9.5	89	129

Detailed information for guaranteed service life of this cable can be found in the latest chainflex® catalogue.

... find the complete range of chainflex® cables up to CAT7 online or in the printed edition of the Ethernet catalogue.



Available from stock

igus® chainflex® CF298

CF299 TPE data cable, shielded

igus® chainflex® CF299

Guarantee
igus chainflex
36
month guarantee

Tested in the chainflex® laboratory: high-end data cables for small radii (4xd) and 40 million double strokes.



... 40 million double strokes guaranteed

... tested in the chainflex® lab at 4xd ...

Tech up

- 100% more double strokes guaranteed
- Bend radii 41% less than those of CF11
- Reliably design cable service life online: www.igus.eu/chainflexlife

Cost down

- Guaranteed cable reliability in e-chains® doubled (from 20 million to 40 million cycles)
- Reduce cost by up to €16.68/m (since the cable lasts twice as long in application)
- 36-month guarantee

Proof

- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 4932, 54 million strokes

Sustainability

- Guaranteed service life doubled
- Installation space reduced thanks to 4xd bend radius
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Part No.	R min e-chain®	Number of cores and conductor nominal cross section [mm ²]	Outer Ø approx. [mm]	Copper index [kg/km]	Weight [kg/km]
CF298.01.02	4xd	2x0.14	4.5	5	15
CF298.01.04	4xd	4x0.14	5.5	9	25
CF298.01.08	4xd	8x0.14	7	16	44
CF298.02.03	4xd	3x0.25	5.5	12	28
CF298.02.04	4xd	4x0.25	6	16	35
CF298.02.07	4xd	7x0.25	7	28	53
CF298.02.08	4xd	8x0.25	7.5	32	61
CF298.03.04	4xd	4x0.34	6	19	37
CF298.03.07	4xd	7x0.34	7.5	33	62
CF298.05.04	4xd	4x0.5	6.5	27	48
CF299.01.02	4xd	(2x0.14)C	6	17	36
CF299.01.04	4xd	(4x0.14)C	6.5	22	45
CF299.01.08	4xd	(8x0.14)C	8.5	35	75
CF299.02.04	4xd	(4x0.25)C	7	32	57
CF299.02.07	4xd	(7x0.25)C	8.5	46	83

Detailed information for guaranteed service life of this cable can be found in the latest chainflex® catalogue.



Simulate, configure and calculate online:
chainflex® product finder, chainflex® service life calculator

Available from stock

CFROBOT7 PUR motor cable for robots



Guarantee
igus chainflex
36
month guarantee



...Motor cable for $\pm 180^\circ/m$ on robots ...

... safety for torsion movements on robots ...

Tech up

- Optimised for twisted ($\pm 180^\circ/m$) use on robots
- Product range addition for small installation spaces
- Reliably design cable service life online:
www.igus.eu/chainflexlife

Cost down

- Use in small installation spaces
- 36-month guarantee

Proof

- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 3698, 12 million strokes

Sustainability

- Robot components can be smaller and lighter
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Simulate, configure and calculate online:
chainflex® product finder, chainflex® service life calculator

Part No.	R min e-chain®	Number of cores and conductor nominal cross section [mm ²]	Outer Ø approx. [mm]	Copper index [kg/km]	Weight [kg/km]
Without control pair					
CFROBOT7.15.03.C	10xd	(3G1.5)C	8.5	60	97
CFROBOT7.15.04.C	10xd	(4G1.5)C	9	77	120
CFROBOT7.25.03.C	10xd	(3G2.5)C	10	93	141
CFROBOT7.25.04.C	10xd	(4G2.5)C	10.5	119	172
CFROBOT7.60.04.C	10xd	(4G6.0)C	15	278	373
2 control pairs					
CFROBOT7.07.03.02.02.C	10xd	(4G0.75+2x(2x0.34)C)C	11.5	88	155
CFROBOT7.15.15.02.02.C	10xd	(4G1.5+2x(2x1.5)C)C	16.5	197	304
CFROBOT7.25.15.02.02.C	10xd	(4G2.5+2x(2x1.5)C)C	16.5	243	348
4 control pairs					
CFROBOT7.40.02.02.04.C	10xd	(4G4.0+4x(2x0.25)C)C	17	253	365

- More tested torsion cables for robots from stock:**
- Control cables
 - Data cables
 - Bus cables
 - Fibre optic cables
 - Measuring system cables
 - Single cores
 - ...

Available from stock

igus® chainflex® CF887



Very cost-effective servo cable for a guaranteed amount of 5 million double strokes in e-chains®.



... New very cost-effective servo cable ...

... PVC servo cable CF887 ...

Tech up

- 5 million double strokes in e-chains® guaranteed
- Small cross-section for use in small installation spaces
- Reliably design cable service life online:
www.igus.eu/chainflexlife

Cost down

- Costs are 51% less than those for CF21.UL
- 36-month guarantee

Proof

- Tested in the largest test laboratory (3,800m²) of its kind for cables in moving applications
- chainflex® test no. 4345, 6 million strokes

Sustainability

- Lower weight means reduced energy requirements for movement
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Simulate, configure and calculate online:
chainflex® product finder, chainflex® service life calculator

Part No.	R min e-chain®	Number of cores and conductor nominal cross section [mm²]	Outer Ø approx. [mm]	Copper index [kg/km]	Weight [kg/km]
1 Control pair shielded					
CF887.07.05.02.01	15xd	(4G0.75+(2x0.5)C)C	10	69	119
CF887.15.15.02.01	15xd	(4G1.5+(2x1.5)C)C	12.5	124	204
CF887.25.15.02.01	15xd	(4G2.5+(2x1.5)C)C	13.5	182	269
CF887.40.15.02.01	15xd	(4G4.0+(2x1.5)C)C	14.5	236	352
2 Control pair shielded					
CF887.10.07.02.02	15xd	(4G1.0+2x(2x0.75)C)C	11.5	109	184
CF887.15.15.02.02	15xd	(4G1.5+2x(2x1.5)C)C	13.5	164	258
CF887.25.15.02.02	15xd	(4G2.5+2x(2x1.5)C)C	14.5	217	325

Detailed information for guaranteed service life of this cable can be found in the latest chainflex® catalogue.

cost down...



...life up

Do the chainflex® price check now for your servo cables: from a selection of seven qualities, we will find the most cost-effective cable that is guaranteed to work in your application. More information on the chainflex® price check on page 64.

Available from stock

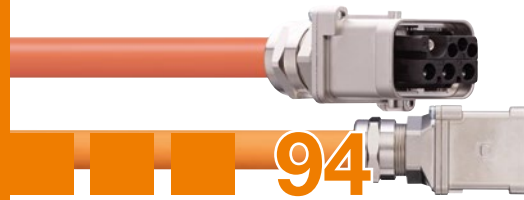
...new...



100 highlight 2020

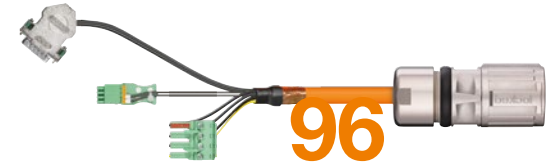
The Module Connect adapter, connected in seconds

Tech up, Cost down. It's our job.



94

Fast planning:
EPLAN macros for
SEW drives



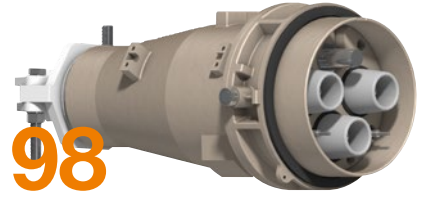
96

Latest hybrid technology
with Hybrid MS2N and
IndraDrive MI: one cable for
power and data



97

Extension cables for robots:
harnessed, ready-to-
connect and ready for use



98

Cable harnessing and
ready-to-install e-chain
systems® for harsh
environments



100

The Module Connect
adapter, connected in
seconds



102

Completely equipped
readycable® factories for
international subsidiaries

Moving energy made easy ...

...readycable®

... harnessed cables

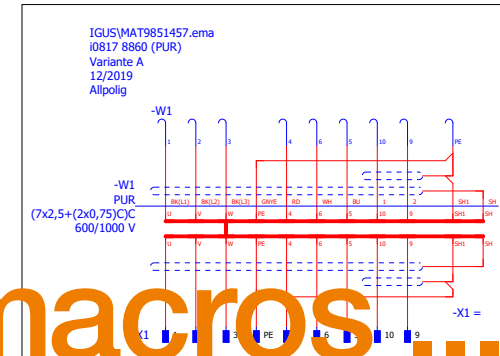
New

Guarantee
igus chainflex

36

month guarantee

ePLAN®
data portal



... fast design ...

... EPLAN macros for SEW drives ...

EPLAN macros

... use in the CAE tool online ...

Tech up

- EPLAN macros for 217 cables for SEW available online
- Automatic generation of cable plan, parts list and further design documents in CAE system
- Select cables, calculate service life and order online: www.igus.eu/readycable

Cost down

- Reduce design time by 50% with ready-to-use EPLAN macros
- Easy digital design & order online immediately
- No minimum quantity surcharges, no cutting charges
- 36-month guarantee on cables sold by the metre

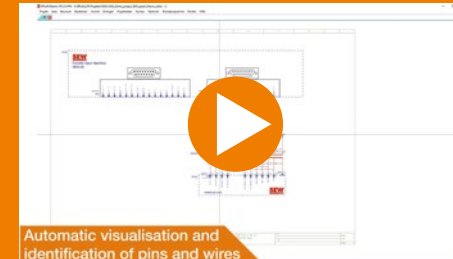
Proof

- Prefabricated modules or macros directly usable in EPLAN as can be seen in the video tutorial: www.igus.eu/eplan-makro
- Mechanical stress tests for energy chains and cables in the world's largest test laboratory in the industry
- More than 12,000 digitally tested harnessed cables per week with unique test label

Sustainability

- All harnessed cables are delivered without waste or excess lengths and have exactly the right fit
- Long-lasting cable materials + high-quality plug-in connectors + machining = Guaranteed reliability and value retention of the components
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Tutorial on new EPLAN macros for readycable® suitable for SEW



This means that with the new macros, the customer can already bring **complete readycable® product data** into their EPLAN during the electrical design phase and complete the parts list.

While the electrical details are being worked out in the design department the user can go **online to the EPLAN data portal** and filter for e.g. 0198 9308 and find all igus® cables in the known qualities, which can then be selected according to the application and use in personal product range.

www.igus.eu/eplan-makro

Product range



... MS2N & IndraDrive MI ready to connect ...

Tech up

- Save installation space and weight with the latest hybrid technology: only one cable for power and data
- Select cables, calculate service life and order online: www.igus.eu/readycable

Cost down

- Reduce cabling time and effort, only one cable instead of two
- Order directly online with manufacturer number
- 24hrs from stock, availability for just-in-time delivery **reduces** your own warehousing facilities
- No minimum quantity surcharges, no cutting charges

Proof

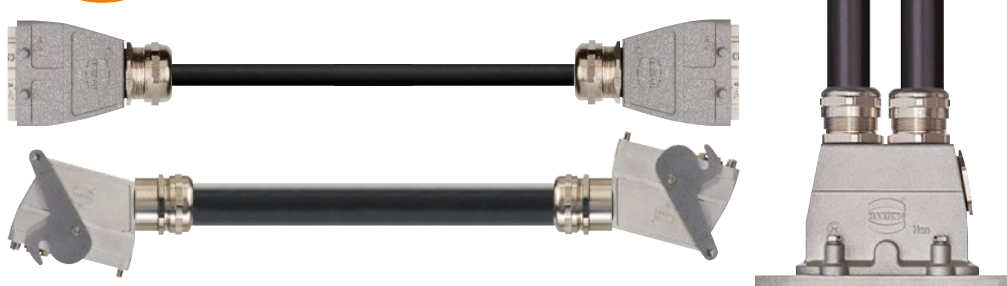
- 100% testing, incl. test seal of approval and test report
- Tested in the largest test laboratory (3,800 m²) of its kind for cables in moving applications
- More than 12,000 digitally tested harnessed cables per week with unique test label

Sustainability

- No residual length or waste : all harnessed cables are cut with centimetre accuracy
- Individual service life calculation for every application without over dimensioning or waste of resources
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Available from stock

Product range



Robot cables ...

... harnessed ready cable® extension cables ...

Tech up

- Harnessed extension cables suitable for Kuka, Fanuc and ABB robots
- Existing robot systems and interfaces can be extended flexibly with the thoroughly tested cable extensions
- Harnessed, ready to connect and immediately ready for use

Cost down

- With seven cable qualities, always find the most cost-effective cable that is guaranteed to work in your application

Proof

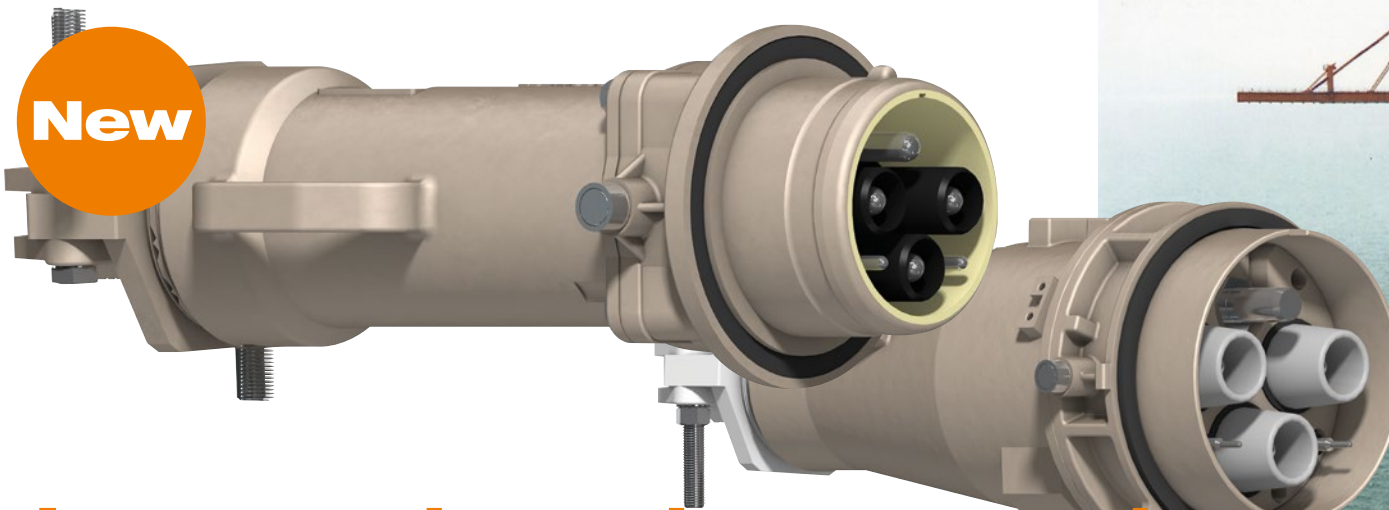
- 100% testing, incl. test seal of approval and test report

Sustainability

- Equip robot applications with durable extension cables and longer maintenance intervals
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

Available from stock

New



Heavy duty harnessing ...

... cable harnessing and ready-to-install e-chain systems® developed especially for harsh environments

Tech up

- Robust and corrosion-free: e-chains and harnessed cables for harsh environments
- Application-optimised and ready-to-install

Cost down

- Save 68% assembly time
- Save 89% procurement time
- Save on assembly and testing tools

Proof

- Crimped, soldered, epoxy resin potted
- 100% tested with Megger VLF Sinus 34kV

Sustainability

- Durable raw components (e.g. Patton & Cooke, Amphenol or Proconnect)
- Lubrication-free and continuously loadable igus® components
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



readychain® in shore power connections
Ships must be supplied with shore-side power at ports in order to switch off the diesel auxiliary generators on board to protect the environment. For this purpose, the vessels must be connected to a cable supply system via a standardised plug connection.

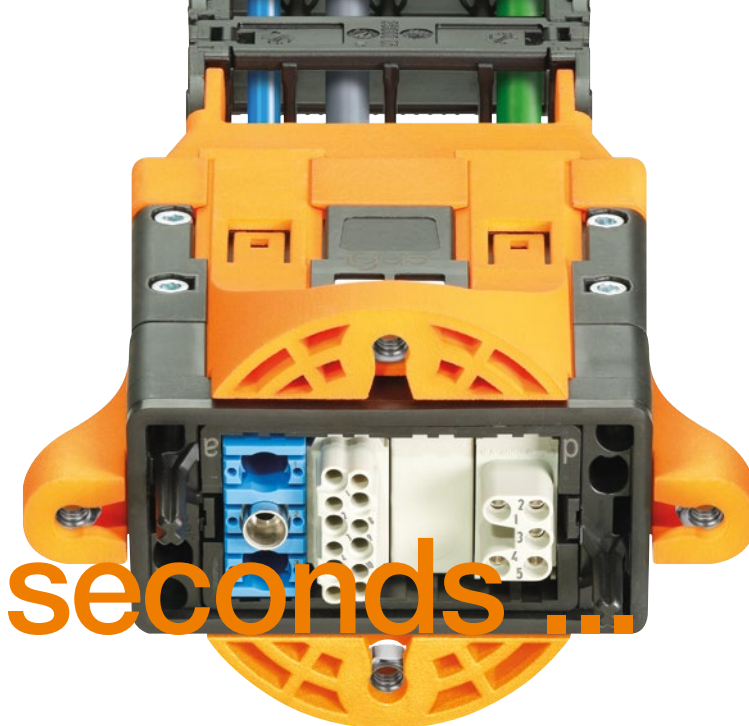


At the highly frequented offshore base Mongstad in Norway, a reliable, robust and flexible system for supplying shore power from igus® is used. A harnessed e-spool® is integrated in a three metre long container that can be handled by forklifts to position the system along the various berths. The container also protects the system from the harsh environment and the effects of port operations. The readychain® system is a slip ring-free solution. All cables are hard-wired, which also reduces the maintenance effort.

New



Standard version: black
(other colours available on request)



... e-chain[®] connected in seconds ...

... Module Connect adapter saves assembly time ...

Tech up

- Fitted without additional sheet metal parts
- Flexible: simple clip fastening
- Safe: integrated strain relief and seal
- Suitable: configure the interface by combining individual housings into one connector

Proof

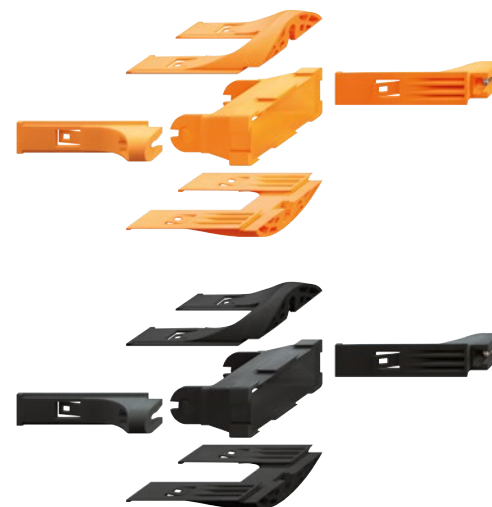
- Module Connect: redden Design Award winner 2018
- Cost-effective interface solution: one connector instead of many individual connectors
- Almost infinite combinations

Cost down

- Substantially more than 80% shorter installation time
- Handling is optimised with ready-to-install modules
- For service: unplug it, plug it back in, done

Sustainability

- Existing igus[®] energy supply systems can be integrated
- Adapters from the 3D printing process are made according to chain width and height
- igus[®] supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil



Easy, modular

The e-chain[®] and the Module Connect are standardised. Depending on the chain series, chain width and number of Module Connect connectors, a matching chain adapter is produced using 3D printing. The adapter is simply assembled to the Module Connect and can be attached to the chain using the **snap-in mechanism**.

As a result, the entire assembly of a ready-chain[®] standard including Module Connect is an interconnected system, i.e. pin assignment and cable lengths are clearly defined.



You can find all the information on the Module Connect system in the brochure and on the igus[®] website: www.igus.eu/moduleconnect

Delivery time upon request





Automated ... standardised ... fast ...

Fully equipped readycable® factories for drive cables suitable for 24 manufacturer standards in Spain, Turkey, UK and Germany

Tech up

- Drive cables in 7 cable qualities
- Machine harnessed
- Consistently high quality thanks to internationally standardised production

Cost down

- Local production reduces transport costs
- 36-month guarantee

Proof

- The development of processes tried out for years in the igus® test laboratory, fulfills the igus® promise of a truly international guarantee

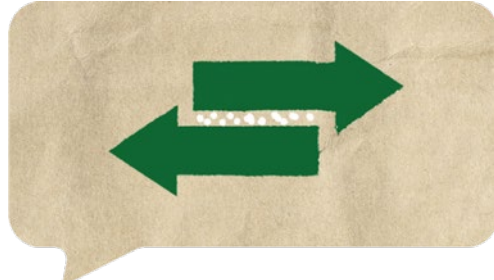
Sustainability

- Local material stocking shortens delivery times and delivery routes
- Local sourcing: local branch optimally accommodates to local requirements
- igus® supports the circular economy of plastics and is investing in chemical recycling. Learn more about this topic at: www.igus.eu/plastic2oil

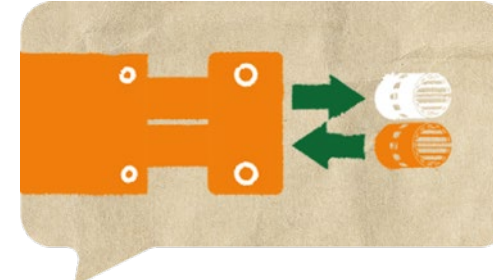




Rarely replace ...
Durable material



Extremely low friction, saving energy ...
Optimised tribology



Save resources and cost ...
Exchange bearings for drylin® linear guides



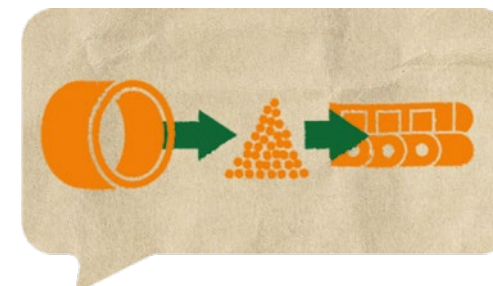
Replace only damaged parts ...
Predictive maintenance with smart plastics



No lubricating oil pollution ...
Lubrication-free and clean bearing technology



Lightweight, saving energy ...
Lightweight plastic material



99% of the waste can be reused ...
Internal recycling since the company's founding



New life for old chains ...
Recycling of old energy chains

Sustainability at igus® www.igus.eu/climate

When we developed the first high-performance polymers for movement, the topic of environmental protection was admittedly not our main focus. Today we know that products that last longer and do not require lubrication contribute to preserving our environment.

We engage in sustainable behaviour that goes beyond our products. For instance, an initial project of ours involved planting 2,500 trees for a new mixed forest. We are improving our organisation according to the

"Operation Clean Sweep" principles, avoiding plastic waste in production. Our environmental management is certified according to ISO 14001. An internal project group continuously introduces sustainable everyday improvements. One example is that we make disused trade show banners into iconic laptop bags.



... It's our job.

green

The "Green Chain Recycling" Program ... www.igus.eu/change

Since the very beginning, we have shredded faulty parts and sprue from plain bearing injection moulding and reused the granulate. We have now also begun a classical recycling program for energy chains: the igus® 'Change' Recycling Program. When your energy chain reaches the end of its service life, you can

send it back to us instead of disposing of it with other products as industrial waste. We separate the material, shred it, and put it back into circulation. You receive an igus® voucher based on the weight of the chain sent to us.

Still to come: plastic2oil in just 20 minutes ... www.igus.eu/plastic2oil

Sorting various plastics requires a great deal of effort, which is why lots of plastic is simply burned, making it impossible to recycle. Mura Technology Limited has developed a technology that transforms classically unrecyclable and mixed plastic wasted into oil within 20 minutes.

The technology is called "catalytic hydrothermal reactor", or "Cat-HTR" for short. Only water, high temperature and pressure are used to separate the cells and join them together again. igus® is supporting the first commercial plant in the UK with an investment of about five million euros.

