

# KABELSCHLEPP

## Innovative solutions

*for the machine tool industry*



CABLE CARRIER SYSTEMS  
TRAXLINE CABLES FOR MOTION  
TOTALTRAX COMPLETE TURN-KEY CARRIER SYSTEMS  
GUIDEWAY PROTECTION SYSTEMS  
CONVEYOR SYSTEMS

EDITION  
**10-2013**

# Innovative solutions

*for the machine tool industry*



kabelschlepp.de/machinetools/gb



## Solutions from one source – from a global partner

The TSUBAKI Group comprises 40 manufacturing sites and 56 subsidiaries and offices in more than 70 countries worldwide. Tsubaki manufactures and supplies a comprehensive range of products from industrial drive & attachment chains, conveyor chains, sprockets, safety devices, shaft couplings & cam clutches to chain drive systems for the automotive industry. Within the TSUBAKI Group, TSUBAKI KABELSCHLEPP is responsible for worldwide product areas for cable carriers, TOTALTRAX complete systems and TRAXLINE cables. KABELSCHLEPP GmbH – Hünsborn produces guideway protection systems and conveyor systems.

The know-how of our product specialists in conjunction with the worldwide sales and service organization provide customers with qualified solutions for many different industries and applications. From consulting, planning and installation to on-site service – wherever you need us.

Additional information:

[www.kabelschlepp.de](http://www.kabelschlepp.de)  
[www.kabelschlepp.de/CAPS](http://www.kabelschlepp.de/CAPS)  
[www.tsubakimoto.com](http://www.tsubakimoto.com)  
[www.tsubaki.eu](http://www.tsubaki.eu)







The Tsubaki Eco Link logo is used only on products that satisfy the standards for environmental friendliness set by the Tsubaki Group.



## ECO & €CO – Ecology & Economy

We are advancing the development of environmentally friendly products to conserve the environment and reduce the environmental impact of our operations by improving the efficiency of production activities and developing products that effectively lower energy consumption.

These ECO & €CO products help customers reduce energy consumption and improve the economic aspects of their operations. Long-Term objective is to significantly reduce CO<sub>2</sub> emissions.

Detailed information on the ECO & €CO initiative can be found at [kabelschlepp.de/ecolink](http://kabelschlepp.de/ecolink)



## Blue Competence

TSUBAKI KABELSCHLEPP is a member of the Sustainability Initiative Blue Competence of the Verband Deutscher Maschinen- und Anlagenbau e.V. (VDMA) (German Association of Machinery and Plant Engineering).

Amongst the objectives of this initiative is to develop procedures and products that consume minimum energy at the maximum productivity, to preserve raw materials and reduce emissions to the minimum.

Thus, we not only develop our products under consideration of the technical progress but, with innovative solutions, also want to show how productivity and energy efficiency can be excellently combined.





# Innovative solutions

*for the machine tool industry*

## ENERGY AND SIGNALS

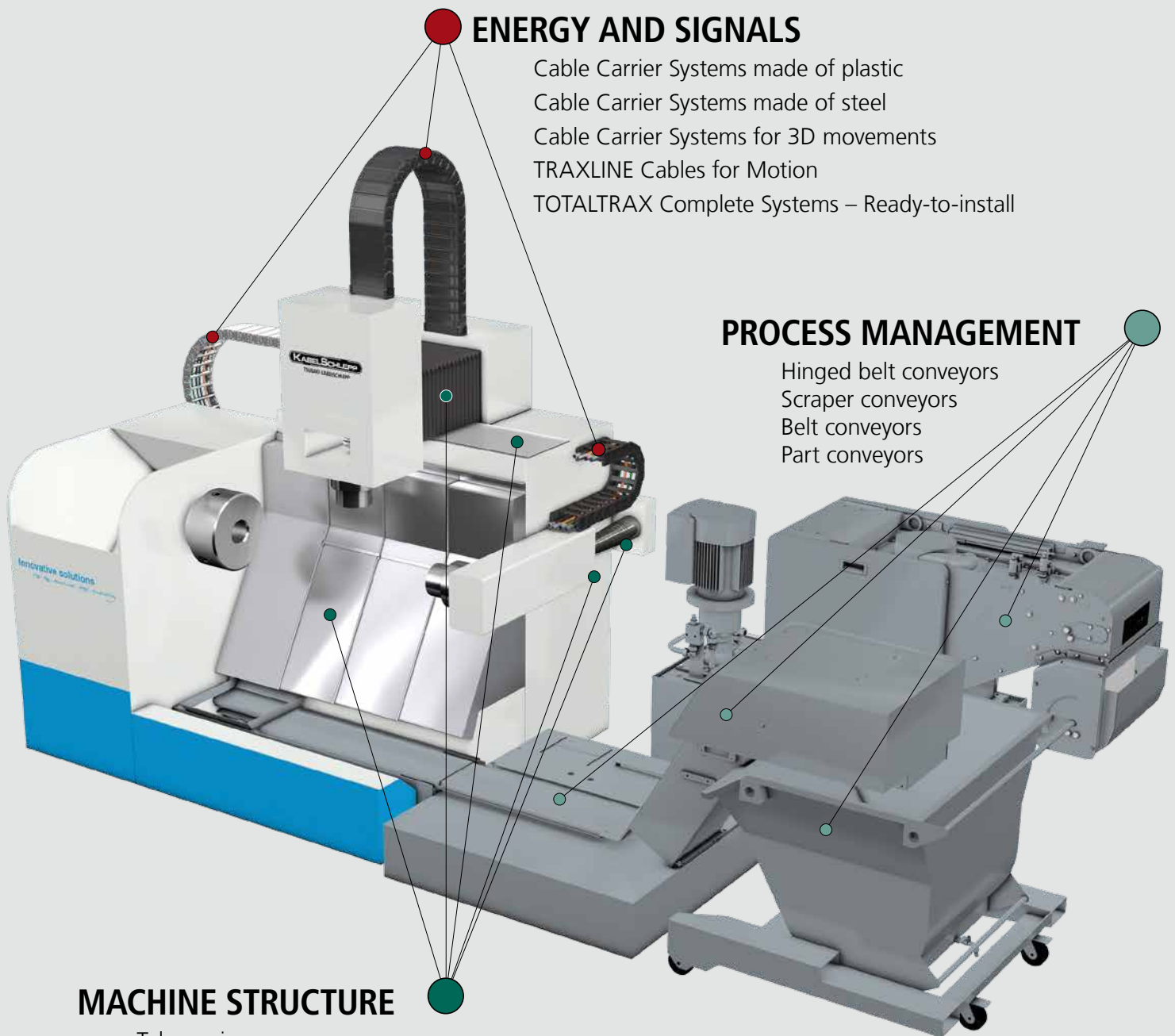
Cable Carrier Systems made of plastic  
Cable Carrier Systems made of steel  
Cable Carrier Systems for 3D movements  
TRAXLINE Cables for Motion  
TOTALTRAX Complete Systems – Ready-to-install

## PROCESS MANAGEMENT

Hinged belt conveyors  
Scraper conveyors  
Belt conveyors  
Part conveyors

## MACHINE STRUCTURE

Telescopic covers  
Way wipers  
Link apron covers  
Bellows  
Conical spring covers



## ENERGY AND SIGNALS see page 6



**STANDARD**  
applications



**ADVANCED**  
applications



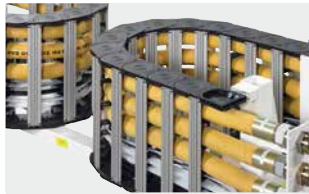
**EXTREME**  
applications



**3D** applications



**TRAXLINE**  
Cables for Motion



**TOTALTRAX**  
Ready-to-install



**Application examples**  
see page 16

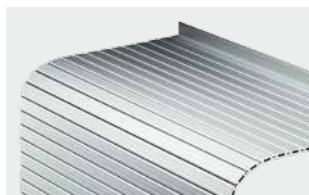
## MACHINE STRUCTURE see page 18



**Telescopic covers**



**Way wipers**



**Link apron covers**



**Bellows**



**Conical spring covers**

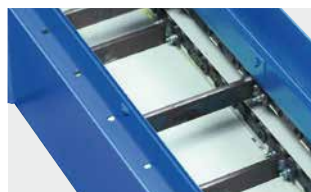


**Application examples**  
see page 24

## PROCESS MANAGEMENT see page 20



**Hinged belt conveyors**



**Scraper conveyors**



**Belt conveyors**



**Part conveyors**



**Application examples**  
see page 24



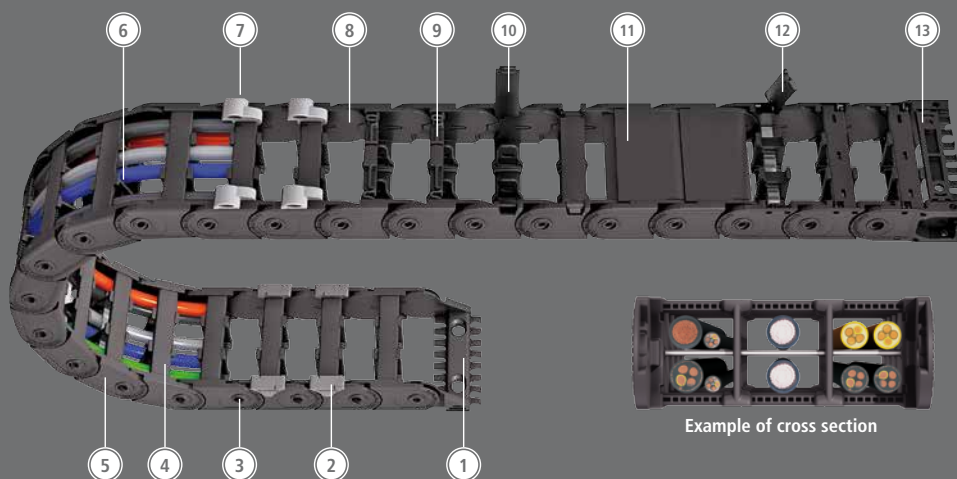


## ENERGY AND SIGNALS

### STANDARD applications

## Solid plastic cable and hose carrier systems with fixed chain widths

Reliable cable and hose carrier systems with simple designs for standard applications. Due to its vast range of various carrier types and designs, TSUBAKI KABELSCHLEPP can offer reliable and cost-efficient solutions such as extremely compact designs, types with non-opening or opening crossbars for fast and easy cable installation, as well as tube style options for superior protection from chips and other debris.



- 1 Mounting brackets with integrated strain relief
- 2 Replaceable glide shoes for extending system life
- 3 Robust, double stroke system for long unsupported lengths
- 4 Types with non-opening, single-part chain link design
- 5 Chain links made of plastic
- 6 Vertical and horizontal partitioning options separate and organize cables
- 7 Outer noise dampening elements
- 8 Inside space is gentle on the cables – no interfering edges
- 9 Very fast and easy cable installation by simply pressing in of the cables
- 10 Types with openable stays – for easy cable installation
- 11 Optional designs covered on one side or on both sides with plastic cover system
- 12 Types with detachable crossbars
- 13 Universal mounting brackets (UMB) with integrated strain relief comb



Example of cross section

#### Sub-division



simple

#### Height



4.6 – 44 mm

#### Width



6 – 250 mm

#### Load



up to 10 kg/m

#### Travel path



up to 150 m

#### Travel speed



up to 10 m/s

#### Acceleration



up to 50 m/s<sup>2</sup>

The assigned values are average values. Depending on the specific application, the maximum values may differ significantly. For detailed information please contact us.

### MONO

Cable carriers with simple design for standard applications



- Simple single piece chain links design with either non-opening or hinged opening crossbars
- Simple and quick assembly
- Compact design for operation in tight spaces
- Mounting brackets with integrated strain relief

More Information:  
[kabelschlepp.de/mono](http://kabelschlepp.de/mono)

### UNIFLEX Advanced

Light, quiet all-rounder for a wide range of applications



- Noise-optimized for quiet operation
- Designs with inward or outward opening or non-opening crossbars available
- Crossbars fast and easy to open due to ball joint hinge mechanism
- Dividers movable or fixed in place
- Long unsupported lengths
- Various cavity partitioning options for the cables

More Information:  
[kabelschlepp.de/uniflex-advanced](http://kabelschlepp.de/uniflex-advanced)

## ENERGY AND SIGNALS

### STANDARD applications

## TKA Series

### Chip-tight right to the end



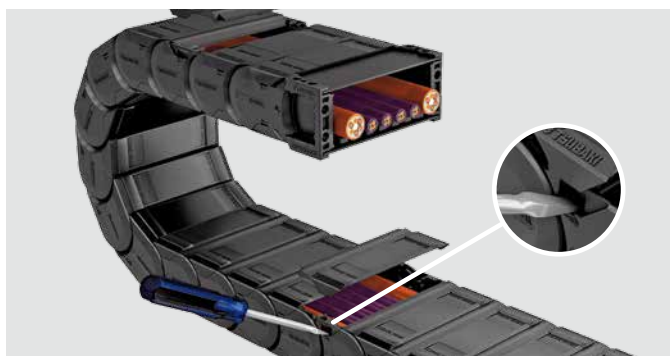
### Splash- and dustproof – in more than 300 variants

The enclosed cable and hose carrier TKA55 was specifically developed for use in environments with contamination from chips and dirt. The design effectively prevents the ingress of foreign bodies into the cable space and provides reliable protection of the cables, up to the protection class IP54 – tested and attested by the TÜV Nord (German Technical Inspection Authority, North).

The optimized geometry of the chain links of the TKA series and the 3-fold, encapsulated stroke system enables exten-

sive unsupported length and high torsional rigidity. Integrated gliding surfaces also predestine them for long travel lengths. Easy to open cover provide secure hold, even under severe mechanical stresses, e.g. when used with hydraulic cables.

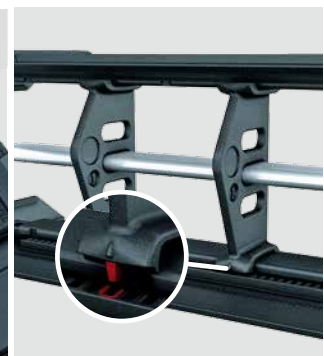
The TKA45, TKA38 and TKA30 types were developed modelled on the TKA55. There is a total of more than 300 versions available with inner widths of 15 to 175 mm and inner heights of 20.5 to 45 mm.



Versions available opening inwards or outwards



Cover system also in the connection area



Fixable dividers with arresting cams

More Information:  
[kabelschlepp.de/tka](http://kabelschlepp.de/tka)

More Information:

Fon +49 (0)2762 4003-0 or Online: [kabelschlepp.de/machinetools/gb](http://kabelschlepp.de/machinetools/gb)

Subject to change.



## ENERGY AND SIGNALS

### STANDARD applications

## TKA Series

### Chip-tight right to the end



Example of cross section

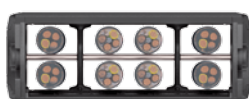
- 1 Secure cover attachment even under severe stresses (e.g. due to hydraulic cables)
- 2 Designs with inward or outward opening covers
- 3 Cable-friendly interior space without sharp edges
- 4 Cover completely detachable on one side
- 5 Quick and easy opening from any vantage point
- 6 Connecting pieces with optional strain relief
- 7 Dividers and height separation for cables
- 8 Chain links made of glass fibre-reinforced plastic
- 9 Cover sheet for universal mounting bracket
- 10 Integrated noise damping system
- 11 Pin and bore connection and stroke system covered completely

Pitch	Height	Width	Load	Travel path unsupported	Travel path gliding	Travel speed	Acceleration
30.5 – 55.5 mm	20.5 – 45 mm	15 – 175 mm	up to 10 kg/m	up to 6 m	up to 150 m	up to 9 m/s	up to 45 m/s <sup>2</sup>

The assigned values are average values. Depending on the specific application, the maximum values may differ significantly. For detailed information please contact us.

## Splash- and dustproof – in more than 300 variants

- Impermeability against chips, excellent cable protection also in the connection area
- TKA55: IP54 tested and attested (TÜV NORD)
- On request, also in special material with protection against hot chips up to 850 °C
- Quick routing of the cables, easy to open
- Inner or outer opening variants available
- Extensive unsupported length due to 3-fold stroke system
- Integrated gliding surfaces for gliding arrangements
- Suppressed against vibration and noise using an internal damping system
- High torsional rigidity



TKA30



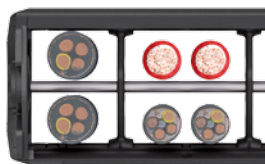
6 inside widths  
15 – 65 mm



TKA38



6 inside widths  
25 – 130 mm



TKA45



5 inside widths  
50 – 150 mm



TKA55



6 inside widths  
50 – 175 mm

More Information:  
[kableschlepp.de/tka](http://kableschlepp.de/tka)

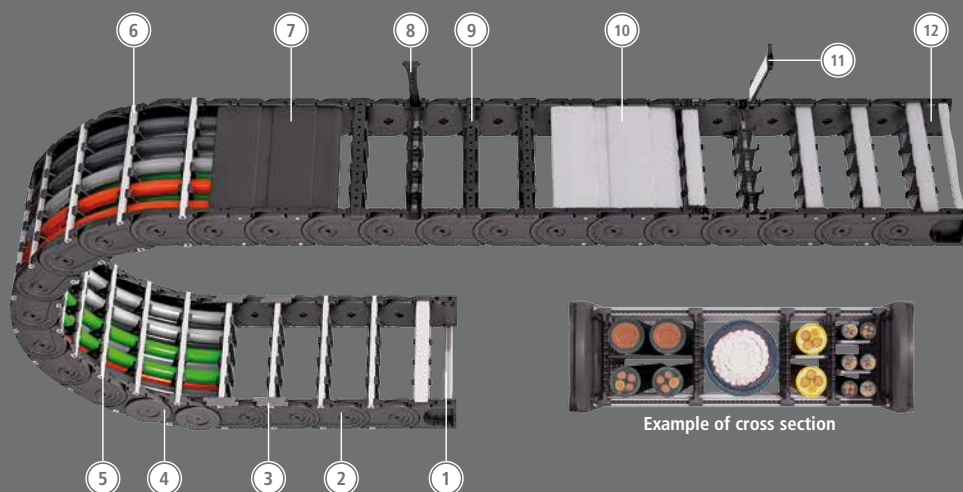


## ENERGY AND SIGNALS

### ADVANCED applications

## Cable and hose carrier systems with variable chain widths

With more than 50.000 design options, ranging from easy-to-open/snap-open or bolted-on frame stay systems to cavity extender systems guiding large vacuum hoses to enclosed tube frame stay systems that provide superior protection from dirt and debris, We offer the ideal solution to fit any application. As an example, cable carriers with linkless design can operate at extreme speeds. Numerous frame stay options allow even the most complex cable configurations to be safely and efficiently partitioned within the carrier cavity.



- ① C-Profile strain relief elements
- ② Minimized hinge wear due to the "life extending 2 disc principle"
- ③ Replaceable glide shoes
- ④ Extremely robust due to heavy-duty link plate/sideband design
- ⑤ Vast selection of cavity partitioning options
- ⑥ Aluminum frame stays available in 1 mm width increments
- ⑦ Plastic covers available in 8 or 16 mm width increments
- ⑧ Crossbars can be quickly opened on the inside or outside radius for easy cable installation
- ⑨ Plastic crossbars available in 4, 8 or 16 mm width increments
- ⑩ Aluminum covers available in 1 mm width increments
- ⑪ Aluminum frame stays with ball joint hinge mechanism
- ⑫ Universal mounting brackets (UMB)

#### Sub-division



complex

#### Height



19 – 108 mm

#### Width



25 – 1000 mm

#### Load



up to 65 kg/m

#### Travel path



up to 350 m

#### Travel speed



up to 40 m/s

#### Acceleration



up to 300 m/s<sup>2</sup>

The assigned values are average values. Depending on the specific application, the maximum values may differ significantly. For detailed information please contact us.

### MASTER Series

Quiet and weight-optimized carriers

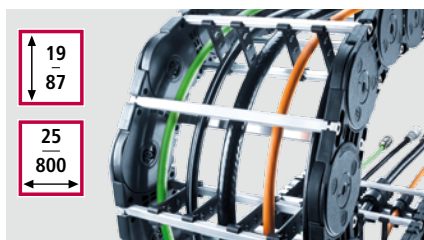


- Light design with weight-optimized sideband construction
- Excellent ratio of inside to outside height
- Customized bend radii are available
- Plastic covers available

More Information:  
[kabelschlepp.de/master](http://kabelschlepp.de/master)

### M Series / MT Series

Robust and versatile all-rounder



- Various separation options
- Large selection of frame stay systems
- Ideal for fast, gliding applications:  
Replaceable glide shoes made of highly wear-resistant special plastic material
- Plastic or aluminum covers available

More Information:  
[kabelschlepp.de/m-series](http://kabelschlepp.de/m-series)

### QUANTUM

Light, quiet, low-vibration



- Suitable for clean room environments
- Allows for high acceleration and high travel speeds
- Long service life – no link pins to wear out
- Linkless design: sidebands made of extruded material

More Information:  
[kabelschlepp.de/quantum](http://kabelschlepp.de/quantum)

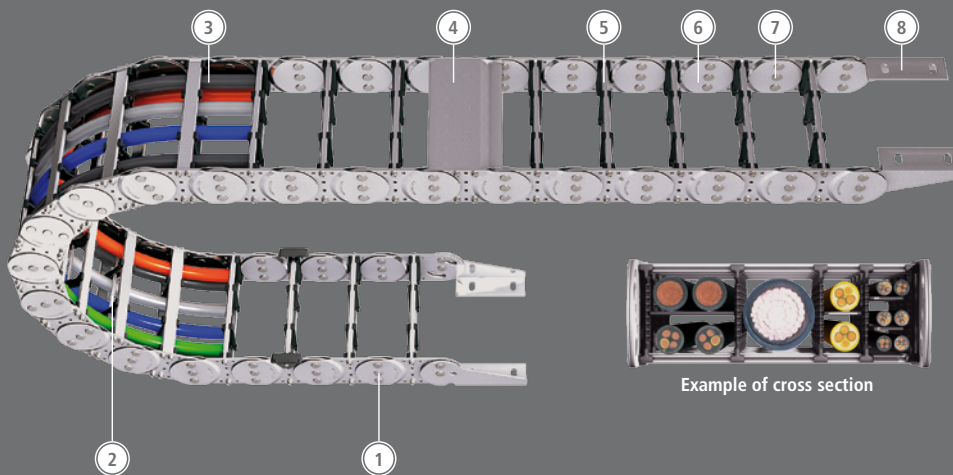


## ENERGY AND SIGNALS

### EXTREME applications

## Steel/stainless steel cable carrier systems – solutions for extreme applications

Lubricant-free cable and hose carrier systems made of steel or stainless steel for applications in extreme environments. Steel and stainless steel carrier systems are the carrier of choice for operation in extreme heat or the harshest environments. We offer various carrier types and designs ranging from compact style to super-sized carriers. Customized cavity partitioning as well as aluminum cover systems provide optimum cable protection even under heavy mechanical loads/stress.



- ① Link design with special bolts for a long service life
- ② Various cable separation options
- ③ Dividers made of plastic or steel
- ④ Aluminum cover available in custom 1 mm width increments
- ⑤ Various frame stay options available customizable in 1 mm width increments
- ⑥ Extremely robust sidebands zinc plated or made of stainless steel
- ⑦ All steel cable carriers are lubricant-free
- ⑧ Variety of mounting bracket options available

**STAINLESS STEEL**  
RUST-FREE  
**STEEL**  
ZINC PLATED

Sub-division	Height	Width	Load	Travel path	Travel speed	Acceleration
complex	24 – 370 mm	26 – 1500 mm	up to 600 kg/m	up to 25 m	up to 10 m/s	up to 20 m/s <sup>2</sup>

The assigned values are average values. Depending on the specific application, the maximum values may differ significantly. For detailed information please contact us.

### LS/LSX Series

Cost-effective, light-weight steel chains



- Improved dynamic characteristics due to weight-optimized design
- Long unsupported lengths for small to medium additional loads
- Cover with steel band for optimum cable protection available on request

More Information:  
[kableschlepp.de/ls-lsx](http://kableschlepp.de/ls-lsx)

### S/SX Series

Extremely robust and heavy-duty steel chains



- Extremely robust and heavy-duty steel chains for large mechanical loads and harsh environmental conditions
- Very long unsupported lengths even for heavy additional loads
- Various types in different dimensions available
- Aluminum cover available for maximum protection of the cables

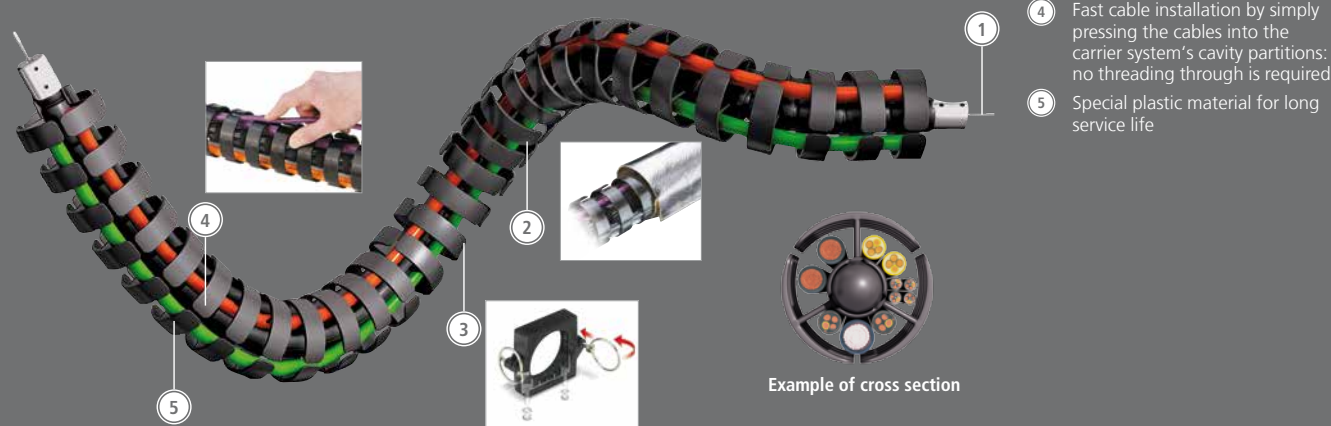
More Information:  
[kableschlepp.de/s-sx](http://kableschlepp.de/s-sx)

## ENERGY AND SIGNALS

### 3D applications

## ROBOTRAX System – Cable and hose carrier systems for 3D movements

ROBOTRAX – cable and hose carrier system for robotic applications – is safe and gentle on the cables. Downtimes are reduced to a minimum. The open-style design allows for fast and easy installation and inspection of cables and hoses once installed. The ROBOTRAX series offers a vast assortment of accessories to perfectly fit the carrier system to the individual application. Solutions include accessories for impact protection, shock and vibration dampening, and heat sleeves for optimum cable protection.



Sub-division



several

Height



10 – 31 mm

Width



27 – 64 mm

The assigned values are average values. Depending on the specific application, the maximum values may differ significantly. For detailed information please contact us.

### ROBOTRAX System

#### LineFix saddly-type clamps for strain relief

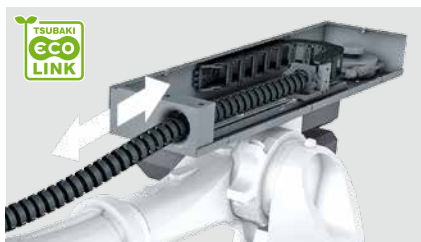


For secure and gentle cable installation. Multilayer strain relief with double and triple clamps available. Multiple systems can also be mounted one behind the other.

More Information:

[kabelschlepp.de/robotrax](http://kabelschlepp.de/robotrax)

#### PULL-BACK-UNIT – PBU



Rapid, repetitive movements of relatively long cable carrier systems in large operating envelopes, constantly hitting the robot arm, are to blame for reducing the service life of the carrier and installed cables. This can lead to a failure of the overall robotic system with expensive downtime and production outages. By using the PULL-BACK UNIT, the service life of the cable carrier and cables is significantly extended, downtimes are kept to a minimum.

#### PROTECTOR



The service life of the cable carriers and cables is significantly reduced through impacts when moving quickly and large operating areas. The PROTECTOR protects the cable carrier from hard impacts, excessive abrasion and premature wear and, simultaneously, provides limiting of the smallest bend radius. Down times are minimized. The complete cable carrier must not be replaced, but only the PROTECTOR.

More Information:

Fon +49 (0)2762 4003-0 or Online: [kabelschlepp.de/machinetools/gb](http://kabelschlepp.de/machinetools/gb)



# Innovative solutions

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kabelschlepp.de/machinetools/gb

## ENERGY AND SIGNALS

# TRAXLINE

Our cable ranges meet the highest quality standards. With the TRAXLINE range, we offer cables which are cost-effective and extremely durable. A key factor is their tested and proven operational reliability, which meets all applicable standards. Competent, objective-driven systems consultation and global on-site service are both part of what we consider an on-going commitment to the technical and commercial optimisation. We deliver ex-stock with no minimum quantities, each length without extra cutting costs.

#### Properties:\*

- oil-resistant
- hi-flex design
- UV-resistant/UV-stable
- RoHS-conform
- metermarked

- halogen-free
- CFC-free
- silicone-free
- flame-retardant
- ozone-resistant

\* some properties are type-dependent; please contact us.

### TRAXLINE CAT.5E / CAT.6 700 CD

Double-shielded continuous bending hi-flex CAT.5E / CAT.6 PUR cable



**Conductor:**  
extremely fine stranded conductors of bare copper wires in an optimized hi-flex design

**Shielding:**  
coverage 85 %  
**Outer jacket:**  
KS-PUR

**Temperature range moved:**  
– 40 up to + 80 °C  
**Minimum bend radius moved:**  
 $KR_{min} \geq 10 \times \varnothing$

**V<sub>max</sub> unsp.: 3 m/s**  
**V<sub>max</sub> gliding: 3 m/s**  
**a<sub>max</sub>: 5 m/s<sup>2</sup>**  
**Insulation resistance:**  
 $\geq 10 \text{ M}\Omega \times \text{km}$

**Approvals:**  
cULus, based on VDE  
Varying parameters possible – please contact us



**Core insulation KS-PP/TPE**  
concentrically stranded



**Outer jacket KS-PUR**  
pressure extruded hi-flex design, UV-resistant extremely abrasion-resistant



**Overall double-shielding**  
continuous bending hi-flex, tin-plated copper braiding Coverage: approx. 90 % and foil shield

### TRAXLINE System S 700 C

Shielded continuous bending hi-flex PUR signal cables



**Conductor:**  
extra-fine wire conductor made from bare or tin-plated copper wires, design-optimized for maximum flexural strength

**Shielding:**  
coverage 80/85 % (type-dependent)  
**Outer jacket:**  
KS-PUR

**Temperature range moved:**  
– 30 up to + 90 °C  
**Minimum bend radius moved:**  
 $KR_{min} \geq 7.5 \times \varnothing$

**V<sub>max</sub> unsp.: 5 m/s**  
**V<sub>max</sub> gliding: 5 m/s**  
**a<sub>max</sub>: 50 m/s<sup>2</sup>**  
**Insulation resistance:**  
 $\geq 10 \text{ M}\Omega \times \text{km}$

**Approvals:**  
cULus, based on VDE  
Varying parameters possible – please contact us



**Core insulation KS-PP/TPE**  
hybrid stranded



**Element shield**  
continuous bending hi-flex, tin-plated braided copper shield with the option of foil shield



**Overall shield**  
continuous bending hi-flex, tin-plated copper braiding for smallest bend radii Coverage: approx. 80 %



**Outer jacket KS-PUR**  
pressure extruded hi-flex design, UV-resistant extremely abrasion-resistant

### TRAXLINE Profibus 700 C

Shielded continuous bending hi-flex Profibus PUR cables



**Conductor:**  
extremely fine stranded conductors of bare copper wires in an optimized hi-flex design

**Shielding:**  
coverage 85 %  
**Outer jacket:**  
KS-PUR

**Temperature range moved:**  
– 20 up to + 70 °C  
**Minimum bend radius moved:**  
 $KR_{min} \geq 15 \times \varnothing$

**V<sub>max</sub> unsp.: 3,5 m/s**  
**V<sub>max</sub> gliding: 2 m/s**  
**a<sub>max</sub>: 10 m/s<sup>2</sup>**  
**Insulation resistance:**  
 $\geq 10 \text{ M}\Omega \times \text{km}$

**Approvals:**  
cULus, based on VDE  
Varying parameters possible – please contact us



**Core insulation KS-PP/TPE**  
concentrically stranded



**Inner jacket KS-PP/TPE**  
valley-sealed, pressure extruded, hi-flex design



**Overall shield**  
continuous bending hi-flex, tin-plated copper braiding Coverage: approx. 90 % and foil shield



**Outer jacket KS-PUR**  
pressure extruded hi-flex design extremely abrasion-resistant

### TRAXLINE System M 700 C

Shielded continuous bending hi-flex PUR motor/servo drive cables



**Conductor:**  
finely stranded conductors of bare copper wires in an optimized hi-flex design

**Shielding:**  
coverage 80/85 % (type-dependent)  
**Outer jacket:**  
KS-PUR

**Temperature range moved:**  
– 30 up to + 90 °C  
**Minimum bend radius moved:**  
 $\leq 16 \text{ mm}^2: KR_{min} \geq 7.5 \times \varnothing$   
 $\geq 25 \text{ mm}^2: KR_{min} \geq 10 \times \varnothing$

**V<sub>max</sub> unsp.: 5 m/s**  
**V<sub>max</sub> gliding: 5 m/s**  
**a<sub>max</sub>: 50 m/s<sup>2</sup>**  
**Insulation resistance:**  
 $\geq 10 \text{ M}\Omega \times \text{km}$

**Approvals:**  
cULus, based on VDE  
Varying parameters possible – please contact us



**Core insulation KS-PP/TPE**  
hybrid stranded



**Element shield**  
continuous bending hi-flex, tin-plated braided copper shield with the option of foil shield



**Overall shield**  
continuous bending hi-flex, tin-plated copper braiding for smallest bend radii Coverage: approx. 80 %



**Outer jacket KS-PUR**  
pressure extruded hi-flex design, UV-resistant extremely abrasion-resistant

### ENERGY AND SIGNALS

#### TRAXLINE Power ONE 700 PE

Unshielded, continuous bending highly-flexible PUR single-core cables with PE core identification



**Conductor:**  
conductors  
class 6 of bare  
copper wires  
in an optimized  
hi-flex design

**Outer jacket:**  
KS-PUR

**Temperature  
range moved:**  
– 40 up to  
+ 90 °C  
**Minimum bend  
radius moved:**  
 $KR_{min} \geq 7.5 \times \varnothing$

**V<sub>max</sub> unsp.:  
20 m/s  
V<sub>max</sub> gliding:  
5 m/s  
a<sub>max</sub>: 50 m/s<sup>2</sup>  
Insulation resis-  
tance:  
 $\geq 100 \text{ M}\Omega \times \text{km}$**

**Approvals:**  
cULus,  
based on VDE  
Varying  
parameters  
possible –  
please  
contact us



**Core insulation KS-PUR**  
wire bundles  
in short pitches



**Outer jacket KS-PUR**  
pressure extruded  
hi-flex design  
extremely abrasion-resistant



**Jacket colour black**  
ozone-resistant  
UV-resistant

#### TRAXLINE Data 700 TPi C

Shielded continuous bending hi-flex PUR data cables



**Conductor:**  
conductors  
class 6 of bare  
copper wires  
in an optimized  
hi-flex design

**Shielding:**  
coverage  
nom. 85 %  
**Outer jacket:**  
KS-PUR

**Temperature  
range moved:**  
– 30 up to  
+ 90 °C  
**Minimum bend  
radius moved:**  
 $KR_{min} \geq 7.5 \times \varnothing$

**V<sub>max</sub> unsp.:  
20 m/s  
V<sub>max</sub> gliding:  
5 m/s  
a<sub>max</sub>: 50 m/s<sup>2</sup>  
Insulation resis-  
tance:  
 $\geq 30 \text{ M}\Omega \times \text{km}$**

**Approvals:**  
cULus,  
based on VDE  
Varying  
parameters  
possible –  
please  
contact us



**Core insulation KS-PP**  
stranded in pairs



**Overall shield**  
continuous bending hi-flex,  
tin-plated copper braiding  
for smallest bend radii



**Jacket colour black**  
ozone-resistant  
UV-resistant



**Inner jacket KS-TPE**  
valley-sealed,  
pressure extruded,  
hi-flex design



**Outer jacket KS-PUR**  
pressure extruded  
hi-flex design  
extremely abrasion-resistant

#### TRAXLINE Control 700 600 V

Unshielded continuous bending hi-flex PUR control cables



**Conductor:**  
conductors  
class 6 of bare  
copper wires  
in an optimized  
hi-flex design

**Outer jacket:**  
KS-PP

**Temperature  
range moved:**  
– 30 up to  
+ 90 °C  
**Minimum bend  
radius moved:**  
 $KR_{min} \geq 7.5 \times \varnothing$

**V<sub>max</sub> unsp.:  
20 m/s  
V<sub>max</sub> gliding:  
5 m/s  
a<sub>max</sub>: 50 m/s<sup>2</sup>  
Insulation resis-  
tance:  
 $\geq 30 \text{ M}\Omega \times \text{km}$**

**Approvals:**  
cULus,  
based on VDE  
Varying  
parameters  
possible –  
please  
contact us



**Core insulation KS-PP**  
bundled stranding  
(> 8 cores)



**Jacket colour black**  
ozone-resistant  
UV-resistant



**Outer jacket KS-PUR**  
valley-sealed extruded  
hi-flex design  
extremely abrasion-  
resistant

#### TRAXLINE Power 700 C 1 kV

Shielded continuous bending hi-flex PUR power cables



**Conductor:**  
conductors  
class 6 of bare  
copper wires  
in an optimized  
hi-flex design

**Shielding:**  
coverage  
nom. 85 %  
**Outer jacket:**  
KS-TPE

**Temperature  
range moved:**  
– 30 up to  
+ 90 °C  
**Minimum bend  
radius moved:**  
 $KR_{min} \geq 7.5 \times \varnothing$

**V<sub>max</sub> unsp.:  
20 m/s  
V<sub>max</sub> gliding:  
5 m/s  
a<sub>max</sub>: 50 m/s<sup>2</sup>  
Insulation resis-  
tance:  
 $\geq 30 \text{ M}\Omega \times \text{km}$**

**Approvals:**  
cULus,  
based on VDE  
Varying  
parameters  
possible –  
please  
contact us



**Core insulation KS-PP**  
bundled stranding  
(> 8 cores)



**Overall shield**  
continuous bending, hi-flex,  
tin-plated, copper braiding for  
smallest bend radii



**Inner jacket KS-TPE**  
valley-sealed,  
pressure extruded,  
hi-flex design



**Outer jacket KS-PUR**  
pressure extruded,  
hi-flex design, extremely  
abrasion-resistant



**Jacket colour black**  
ozone-resistant  
UV-resistant

Find the complete TRAXLINE cable programme on our website: [kabelschlepp.de](http://kabelschlepp.de)  
Or please contact us – our experts will be glad to advise you.



## ENERGY AND SIGNALS

### Cut costs with TOTALTRAX complete cable carrier systems

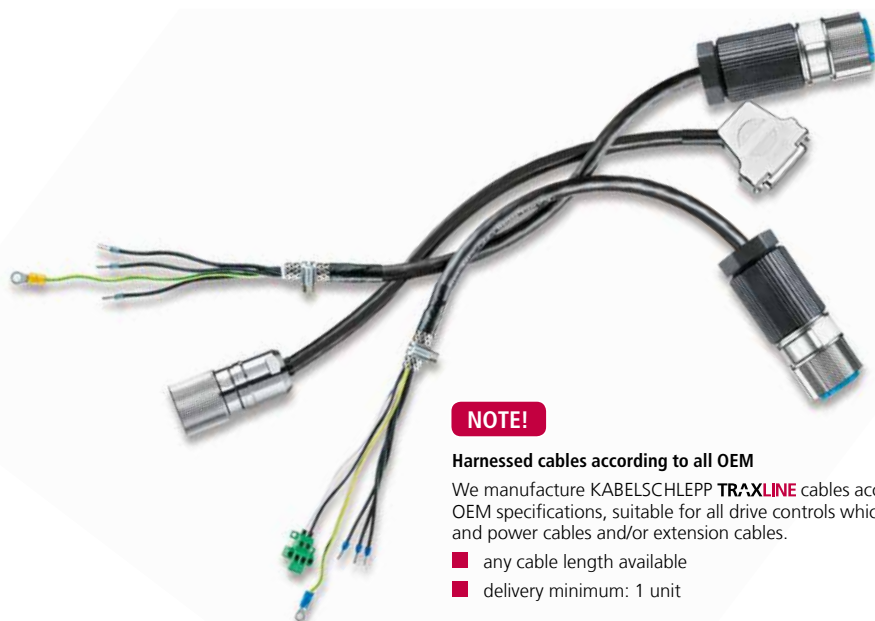
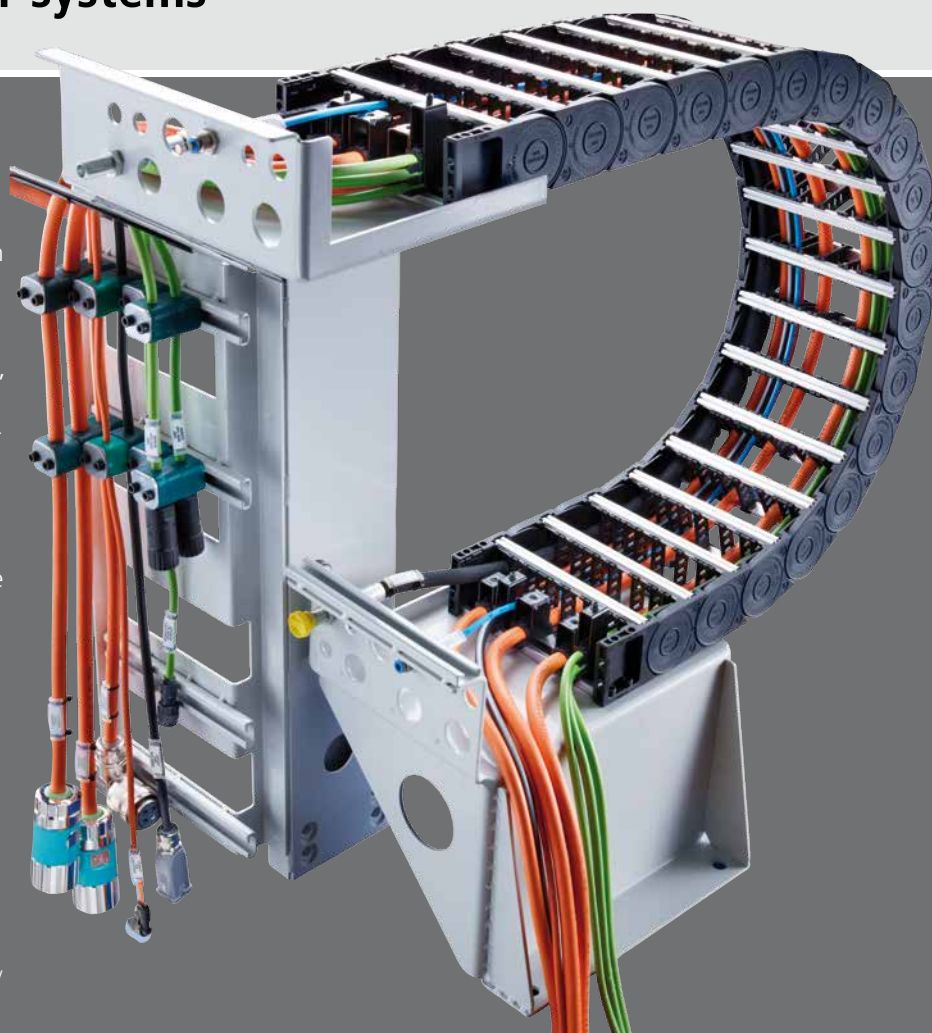
Use our know-how. Working closely with you, our experienced system specialists can provide pre-sale support, including planning and design services through post sales service and support. Only one contact person for the complete system.

All components match each other perfectly, including your cable carriers, electrical cables, hydraulic and pneumatic hoses as well as connectors. You'll receive the complete system in one delivery, with guarantee certificate if desired – in short: TOTALTRAX.

Reduce your storage costs for cable and hose carriers, cables and connectors with TOTALTRAX. We supply all components Just-In-Time to your production facility or directly to the installation site.

#### Everything from a single source:

- Consulting
- Planning
- Design
- Cable carriers
- Power & control cables
- Complete guarantee
- Hydraulic hoses
- Pneumatic hoses
- Plug-and-socket connectors
- Assembly plates
- Complete assembly of all components



#### NOTE!

##### Harnessed cables according to all OEM

We manufacture KABELSCHLEPP TRAXLINE cables according to OEM specifications, suitable for all drive controls which consist of signal and power cables and/or extension cables.

- any cable length available
- delivery minimum: 1 unit





## ENERGY AND SIGNALS

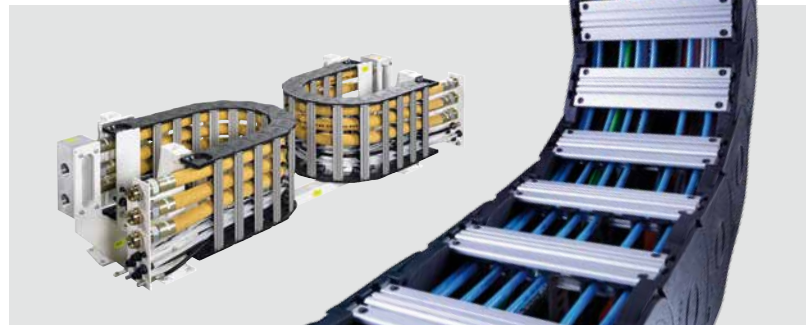
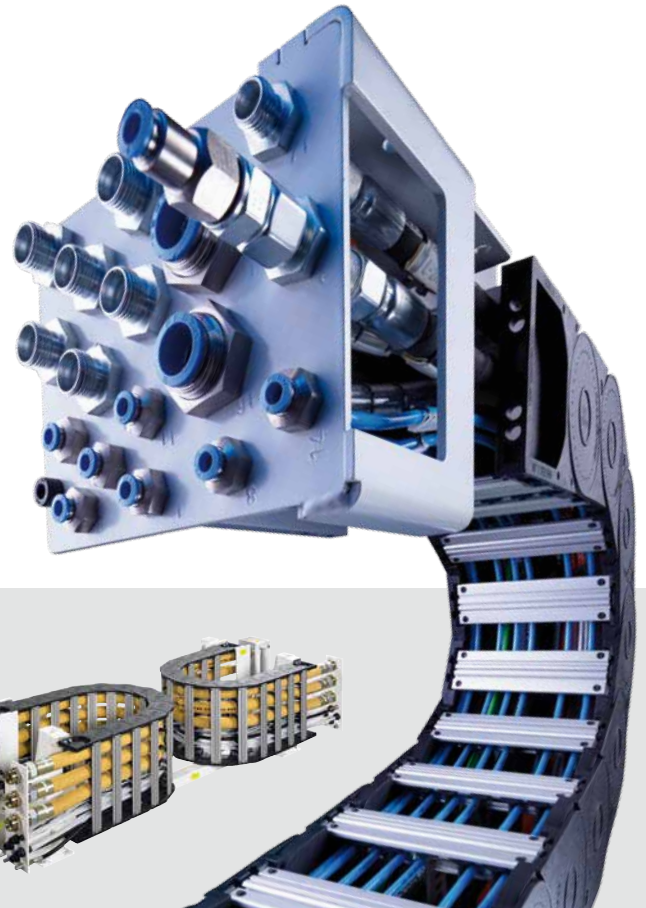
### Cut costs with TOTALTRAX complete cable carrier systems

We help you . . .

- Advice on planning
- Support in the design phase
- Only one contact person for the complete system including all the individual components
- Complete delivery from a single source
- Only one supplier – one purchase order and one item number
- All components match each other perfectly
- Guarantee certificate upon requests

. . . to cut your costs!

- Goods receiving inspections for all individual components are no longer required
- Expensive technical personnel and special tools are no longer required
- Shorter assembly times
- No hidden costs, e.g. cables being cut to excessive lengths etc.
- Less captive capital with almost no inventory
- On-time delivery directly to your production site



**OnlineEngineer.de**  
TSUBAKI KABELSCHLEPP  
Cable Carrier Configurator

### Online configuration tool for cable carrier systems

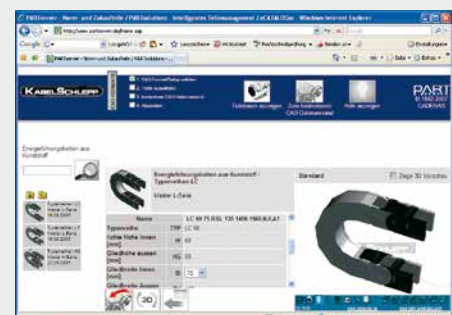
Using TSUBAKI KABELSCHLEPP **OnlineEngineer**, in just a few clicks of the mouse you can **quickly select and configure** the optimal TSUBAKI KABELSCHLEPP cable carrier system for your application. Just input the parameters of your application and the OnlineEngineer will **automatically calculate** the TSUBAKI KABELSCHLEPP cable carrier system with the **optimal price/performance ratio!** Alternatively, you can follow easy step-by-step menus and individually design your desired cable carrier system.

Finally, if you already know which TSUBAKI KABELSCHLEPP cable carrier systems you would like to use, just enter the order specifications and you will receive all applicable information by mouse click. Since any and all functions can be combined, the specification data needs to be entered only once. A corresponding **2D drawing or 3D model** of your carrier can be immediately downloaded.



### Save time with our 2D & 3D drawing library available online

Our 2D and 3D CAD drawings simplify the job for your design engineers. You can find the data for our cable carriers in the **CADENAS** component libraries. TSUBAKI KABELSCHLEPP provides free drawing libraries. Once selected CAD data can be saved or exported in a wide range of formats for import into your CAD system. Can't find what you are looking for, please contact us.





## ENERGY AND SIGNALS

### Application examples

Decades of application experience in hundreds of market segments and with thousands of product combinations result again and again in new tailor-made and user oriented solutions for our customers.



Plastic cable carriers on a roll neck milling machine.  
Photographs: Rottler Werkzeugmaschinen GmbH



Cable carrier system TKA Series on a machining center



Plastic cable carrier on a CNC-machining center. Photographs: Reichenbacher GmbH



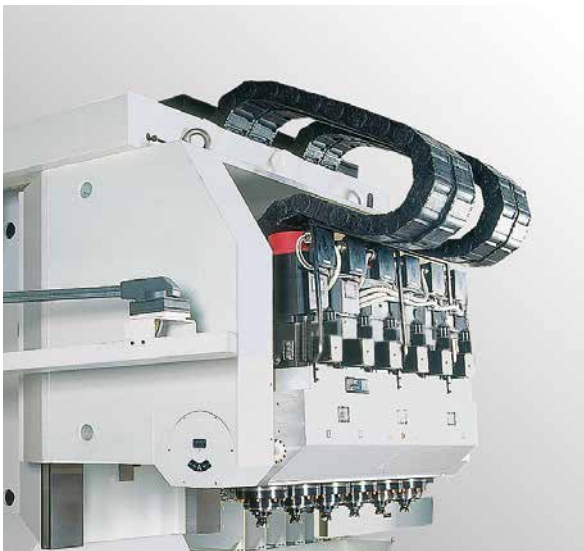
Cable carriers of the MASTER LT series on a tube end processing machine. Photographs: Rottler Werkzeugmaschinen GmbH



## ENERGY AND SIGNALS



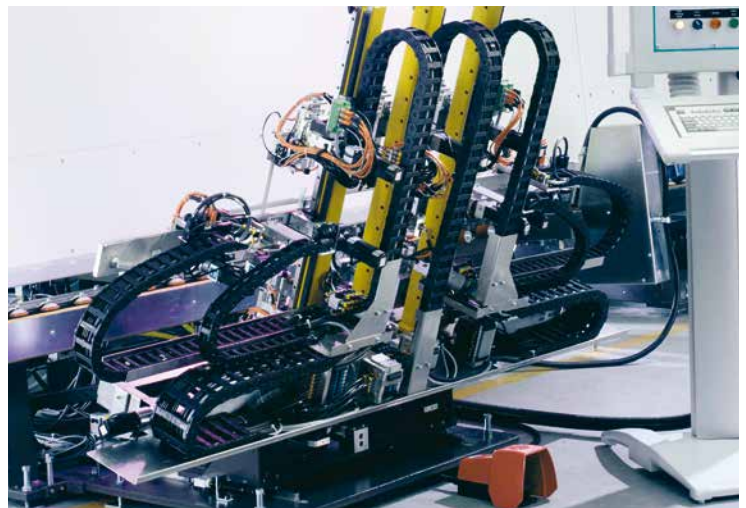
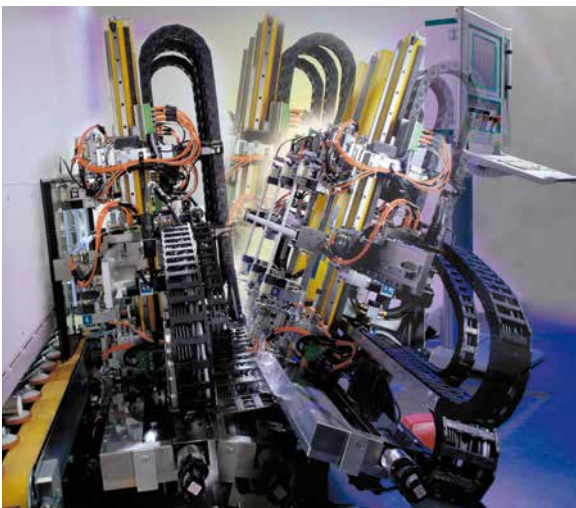
ROBOTRAX, K Series and M Series cable carriers on a laser cutting machine. Photograph: Soudronic AG Automotive



M Series cable carrier on a high-performance machining center. Photograph: Liechti Engineering AG



QUANTUM cable carrier system on a handling system



Plastic cable carriers on an automatic window frame setting station. Photographs: Lenhard Maschinenbau GmbH





## MACHINE STRUCTURE

### Telescopic covers

#### Perfect protection for guideways on machine tools

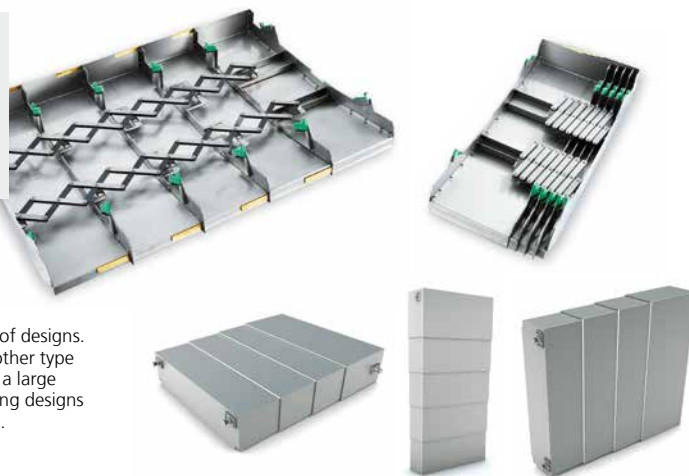
Today, modern machine tools process workpieces at ever-greater cutting and travel speeds. The protection of guideways, measuring systems, drive elements and other vulnerable parts is absolutely essential. Accelerations and speeds of machines are constantly increasing. Telescopic covers must also be able to cope with these challenges. This is where telescopic covers with harness mechanisms are used. So-called differential drives serve to synchronize the boxes and eliminate impact pulses.



# SXM

KABELSCHLEPP  
Synchronized Expansion Mechanism

The KABELSCHLEPP harness technology is used wherever you find this symbol.



#### Designs

Machine tools come in a wide variety of designs. That is why a modern lathe needs another type of telescopic cover than, for example, a large bed-type milling machine. The following designs provide an overview of typical designs.

**NEW!**

Proffen Waterjet Protection:  
DIN EN 60529 – IPX6

Reliable and Impact Resistant: DIN EN  
50102 – IK08 (10)

TA  
**IPX6**  
getestet &  
bescheinigt  
tested &  
attested

TA  
**IK08**  
getestet &  
bescheinigt  
tested &  
attested



Please contact us for more information – we will be glad to advise you.

### Way wipers

#### The cleanup crew

Way wipers are essential to keep the guideways in a proper functional state, and thus to keep the machine tool permanently in operation. Even if the guideways are already protected by a telescopic cover, it is necessary to wipe fine, penetrating particles off of the vulnerable ways.

#### Designs

Available in a wide variety of shapes, harnessed according to your specifications, in bar form or available ex-stock.



More Information:

Fon +49 (0)2762 4003-0 or Online: [kabelschlepp.de/machinetools/gb](http://kabelschlepp.de/machinetools/gb)

Subject to change.

## MACHINE STRUCTURE

### Link apron covers

#### Solutions for limited spaces

Link apron covers can be used anywhere where, for reasons of space, it is not possible to use telescopic covers. They lie directly on the guideways and can hang down freely at the end of the path, or be screwed on or wound around without any special guides.

#### Properties

- Small space requirement
- Protection against chips and lubricant
- Protection against most cooling lubricants, oil, grease, dirt and dust
- Splash- and hose-proof
- Low weight
- Long service life
- Heat-resistant to 100 °C over extended periods
- Customized end attachment
- Can be supplied with a roller device (type-dependent)
- Liquid-tight or self-extinguishing versions possible
- Short delivery time
- Attractive price/performance ratio



### Bellows

#### Guideway protection solutions with very little compression

Bellows are used on all kinds of machine to provide protection for guideways and spindles

#### Properties

- Simple installation
- High travel speed
- Minimal compression
- High quality
- Protection against most cooling lubricants, oil, grease, dirt and dust
- Liquid-tight or self-extinguishing versions possible



### Conical spring covers

#### Protection under extreme conditions

Our conical spring covers are energy efficient. They follow the machine movements automatically. Conical spring covers protect spindles, columns, shafts, threads and rod guides reliably against contamination, chips and mechanical damage. They provide a good sealing function, and are self-cleaning if installed in a suitable position. High temperature resistance and resistance to chemicals guarantee reliable protection even under extreme operating conditions.

#### Properties

- Accident prevention for operating personnel from revolving spindles and shafts
- Reduction in downtimes resulting from contamination
- Increased machine service life
- Some conical spring covers are also available for retrofitting



More Information:

Fon +49 (0)2762 4003-0 or Online: [kabelschlepp.de/machinetools/gb](http://kabelschlepp.de/machinetools/gb)



## PROCESS MANAGEMENT

### Hinged belt conveyors

Proven for a wide range of disposal tasks

Transportation of the material takes place on the upper trough of a revolving hinged belt. Drivers ensure transport of the material up the inclined section. For wet machining the cooling lubrications are collected in the conveyor housing and can be fed back into the machine circuit via an optionally available coolant container or a pump station. Our hinged belt conveyors can be used either as stand-alone conveyors at machine tools, or as linked conveyor systems. Depending on the design, the material to be conveyed is brought to the required height at a defined incline and then discharged.

#### Structure

- Stable metal plate construction
- Standardized housing cross-section with variable width
- Robust worm gear motor
- Customized discharge height
- Customized incline standards = 30°, 45° and 60°
- Floor mounting or as a push-in version into the machine base

#### Accessory examples

- Motor monitoring systems with current-monitoring relay
- Other overload safety devices (on request)
- Coolant container with pump station
- Direct electrical connection to your machine controller
- Other special solutions are available.
- Please do get in touch with us, we will be happy to advise you.



This way we can solve your disposal tasks in over 80 % of all cases:

- Wet or dry chips
- Workpieces and waste
- Hot forgings
- Stampings and punching scrap
- And much more

#### Types and main areas of application

##### SRF 040.00 – the elegant “small one”, and particularly compact

Pitch of the hinged belt  
t = 40 mm

With its small pitch (40 mm) and extremely compact design, this conveyor is suitable for even the smallest machine tools.



##### SRF 063.00 – the “classic”, and our best seller

Pitch of the hinged belt  
t = 63 mm

The conveyor type for most mechanical engineering applications.



##### SRF 100.00 – the “big one” and especially robust

Pitch of the hinged belt  
t = 100 mm

With a pitch of 100 mm, this conveyor is particularly useful when large quantities of chips are present.



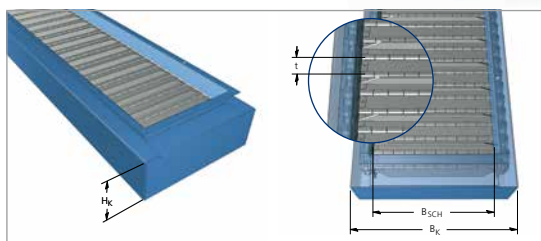
##### SRF 150.00 – the “strongest” one we build

Pitch of the hinged belt  
t = 150 mm

Special solutions with 150 mm pitch for transporting away of large outputs or large parts.



#### Standard dimensions



Type	Pitch t	Box height H <sub>K</sub>	Hinged belt width B <sub>SCH</sub>	Box width B <sub>K</sub>
SRF 040.00	40	140	150, 200, 250, 300, 450, 600	B <sub>SCH</sub> + 75 mm
SRF 063.00	63	216	150, 300, 450, 600, 750, 900	B <sub>SCH</sub> + 120 mm
SRF 100.00	100	360	150, 300, 450, 600, 750, 900	B <sub>SCH</sub> + 150 mm
SRF 150.00	150	540	300, 450, 600, 750, 900	B <sub>SCH</sub> + 190 mm

Special widths on request.



## PROCESS MANAGEMENT

### Hinged belt designs



**Hinged belt (standard)**  
for dry materials and chips with a low proportion of coolant



**Hinged belt with perforations**  
for pre-separation of coolant for materials with a high proportion of coolant



**Hinged belt conveyor with corrugations**  
for transporting adhering parts

## Hinged belt conveyor with Wave-Belt System

### No hinge – low wear

Chips and dirt can accumulate in the hinges with conventional hinge belt conveyors.

The WAVE-BELT System has no hinges on the top side of the belt and is smooth in this area. Chips and dirt cannot get trapped. Due to the “WAVE-FORM” of the belt plates, there is hardly any gap between the plates. **This makes the hinge belts tighter, have a longer service life and require less maintenance.**

The side rims have also been further developed so that almost no conveyed material can get trapped in this area. In this way, **wear and the risk of failure are reduced.**

### Hinged belt conveyor with WAVE-BELT System

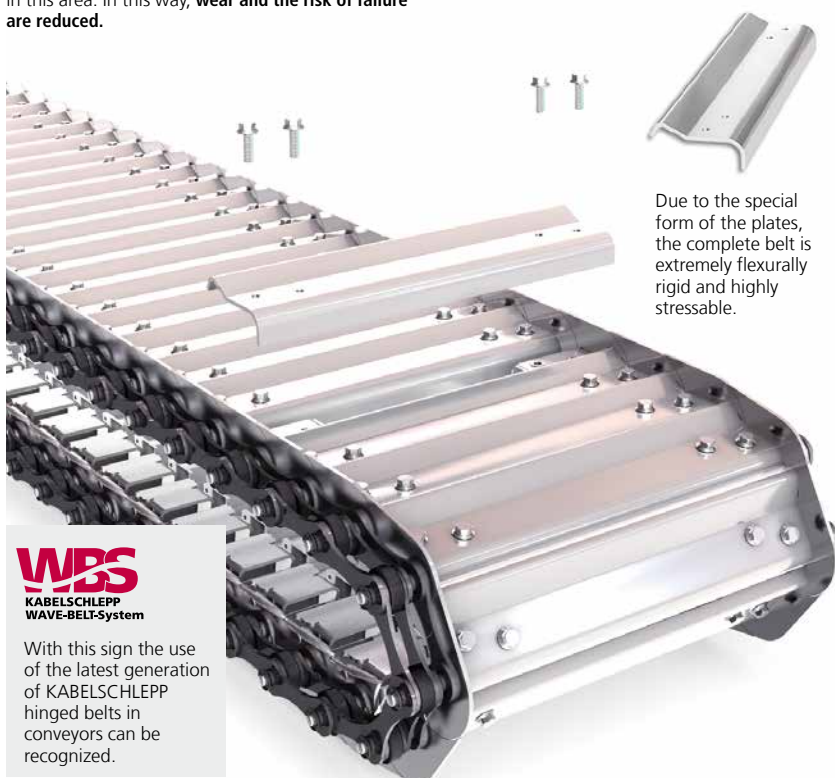
- Longer service life due to optimized belt design
- Tighter than conventional belts, as there are no hinges
- Extremely stable due to special shaping of the individual belt plates
- Easy to maintain due to bolted and thus very easily replaceable belt plates

### Easy replacement of individual hinge belt plates

The belt plates are bolted and can be easily replaced if needed without having to dismantle the complete conveyor belt.



Replacement of individual hinge belt plates at the discharge



Due to the special form of the plates, the complete belt is extremely flexurally rigid and highly stressable.



With this sign the use of the latest generation of KABELSCHLEPP hinged belts in conveyors can be recognized.

More Information:

Fon +49 (0)2762 4003-0 or Online: [kabelschlepp.de/machinetools/gb](http://kabelschlepp.de/machinetools/gb)



## PROCESS MANAGEMENT

### Scraper conveyors

#### For disposal of small materials

Transport of the material takes place via drivers which push the material along the floor of the housing towards the discharge. Cooling lubricants are collected in the conveyor housing and can be fed back into the machine circuit via an added-on container or a pumping unit. Our scraper conveyors can be used as stand-alone conveyors at machine tools or as linked conveyor systems. Depending on the design, the material to be conveyed is brought to the required height at a defined incline and then discharged.

#### Structure

- Stable metal plate construction
- Standardized housing cross-section with variable width
- Robust worm gear motor
- Customized discharge height
- Customized incline standards = 30°, 45° and 60°
- Floor mounting or as a push-in version into the machine base

#### Accessory examples

- Motor monitoring systems with current monitoring relay
- Other overload safety devices (on request)
- Coolant container with pump station
- Direct electrical connection to your machine controller
- Other special solutions are available. Please do get in touch with us, we will be happy to advise you.



#### The solution for small and short chips:

- Frequently used for machining of non-ferrous metals
- Can also be used for very hard, short chips
- Casting chips, milling chips and sawing chips

#### Types and main areas of application

##### KRF 040 – the “classic” scraper conveyor

Pitch of the scraper belt  
 $t = 40 \text{ mm}$

Our standard scraper conveyor for smaller machine tools and small quantities of chips.



##### KRF 063 – for somewhat “bigger” tasks

Pitch of the scraper belt  
 $t = 63 \text{ mm}$

For larger machines and larger quantities of chips.



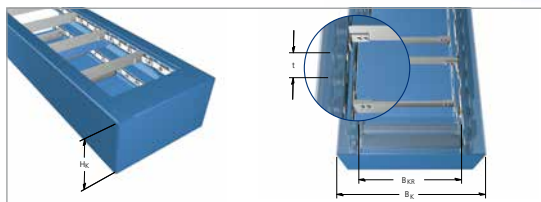
##### KRF 100 – the “Jumbo” for highest demands

Pitch of the scraper belt  
 $t = 100 \text{ mm}$

Special solution for very large quantities of chips.



#### Standard dimensions



Type	Pitch $t$	Box height $H_K$	Scraper belt width $B_{KR}$	Box width $B_K$
KRF 040.00	40	140	150, 200, 250, 300, 450, 600	$B_{KR} + 90 \text{ mm}$
KRF 063.00	63	216	150, 300, 450, 600, 750, 900	$B_{KR} + 120 \text{ mm}$
KRF 100.00	100	420	150, 300, 450, 600, 750, 900	$B_{KR} + 150 \text{ mm}$

Special widths on request.

## PROCESS MANAGEMENT

### Belt conveyors

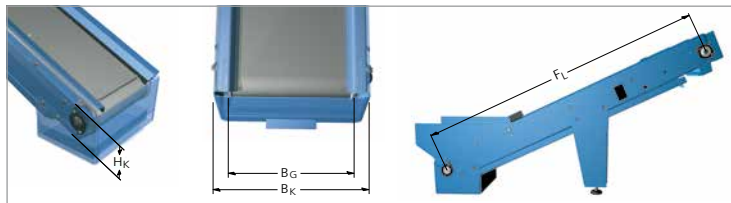
The all-rounders – also for parts with sharp edges

Our belt conveyors are predominantly used on punch-nibbling machines, for transporting punching scrap and punching trimmings. However, other parts can also be transported, such as waste parts from plastic injection machines. The transport belt of the conveyor is resistant to oil and grease.

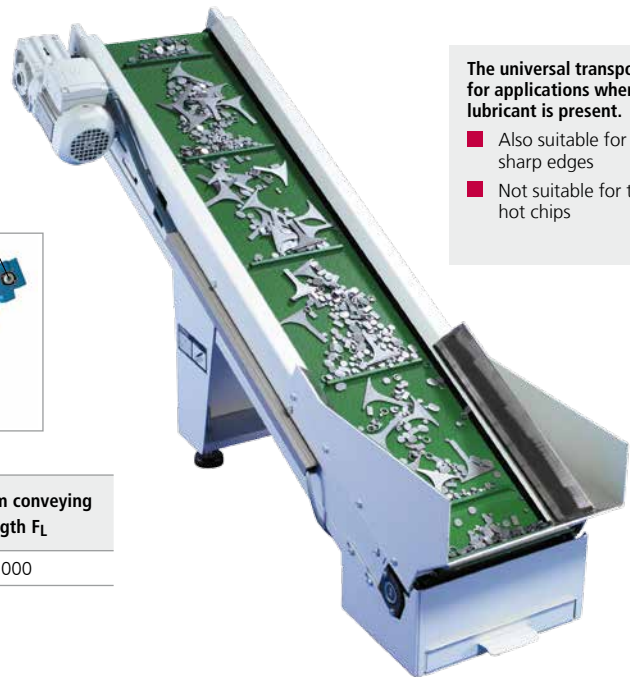
#### Structure

- Housing made of steel plate
- Oil-resistant belt
- Protective motor switch
- Convex return shafts
- Shafts with ball bearings
- Adjustable belt tension

#### Standard dimensions



Type	Box height $H_K$	Belt width $B_G$	Box width $B_K$	Maximum conveying length $F_L$
GBF	104	150, 200, 250, 300, 450, 600	$B_G + 50$	5000



The universal transport solution, for applications where no cooling lubricant is present.

- Also suitable for parts with sharp edges
- Not suitable for transporting hot chips

### Part conveyor

Scratch-free parts transfer at production machines

The part conveyor is a solution for automatic production on punching nibbling machines. Both smooth and angular parts can be transported. The overall concept and the integration into the machine were developed in cooperation with our customers.

#### Gentle transport all the way to the parts depot

The parts conveyor provides the option of gently transporting parts with high standards for surface quality out into the required parts depot. The brush rollers in the discharge area ensure that the materials being transported are transferred to the parts depot virtually horizontally.



#### Part conveyor

- Scratch-free transport of parts
- For smooth and angular parts
- Height-adjustable
- Parts depot with swiveling floor
- Height of conveyed material from 0.5 to 25 mm





## MACHINE STRUCTURE & PROCESS MANAGEMENT

### Application examples

Decades of application experience in hundreds of market segments and with thousands of product combinations result again and again in new tailor-made and user oriented solutions for our customers.



Telescopic covers on a heavy-duty cutting machine



Chip disposal on a deep drilling machine



Chip disposal with large container unit



Telescopic covers on a heavy-duty cutting machine



Link apron cover on a milling machine



Hinged belt conveyor and telescopic covers on a CNC guided drilling machine



## MACHINE STRUCTURE & PROCESS MANAGEMENT



Hinged belt conveyor on a machine tool



Telescopic cover with harness mechanism on a 5-Axis portal milling machine



Telescopic cover on a turning machine



Way wipers on guideways



WAVE-BELT conveyor on a laser cutting machine



WAVE-BELT conveyor on a laser cutting machine



# Innovative solutions

*for the machine tool industry*



kabelschlepp.de/machinetools/gb

## SALES NETWORK WORLDWIDE

**TSUBAKI**  
**KABELSCHLEPP**  
is there for you:  
**Around the world.**

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