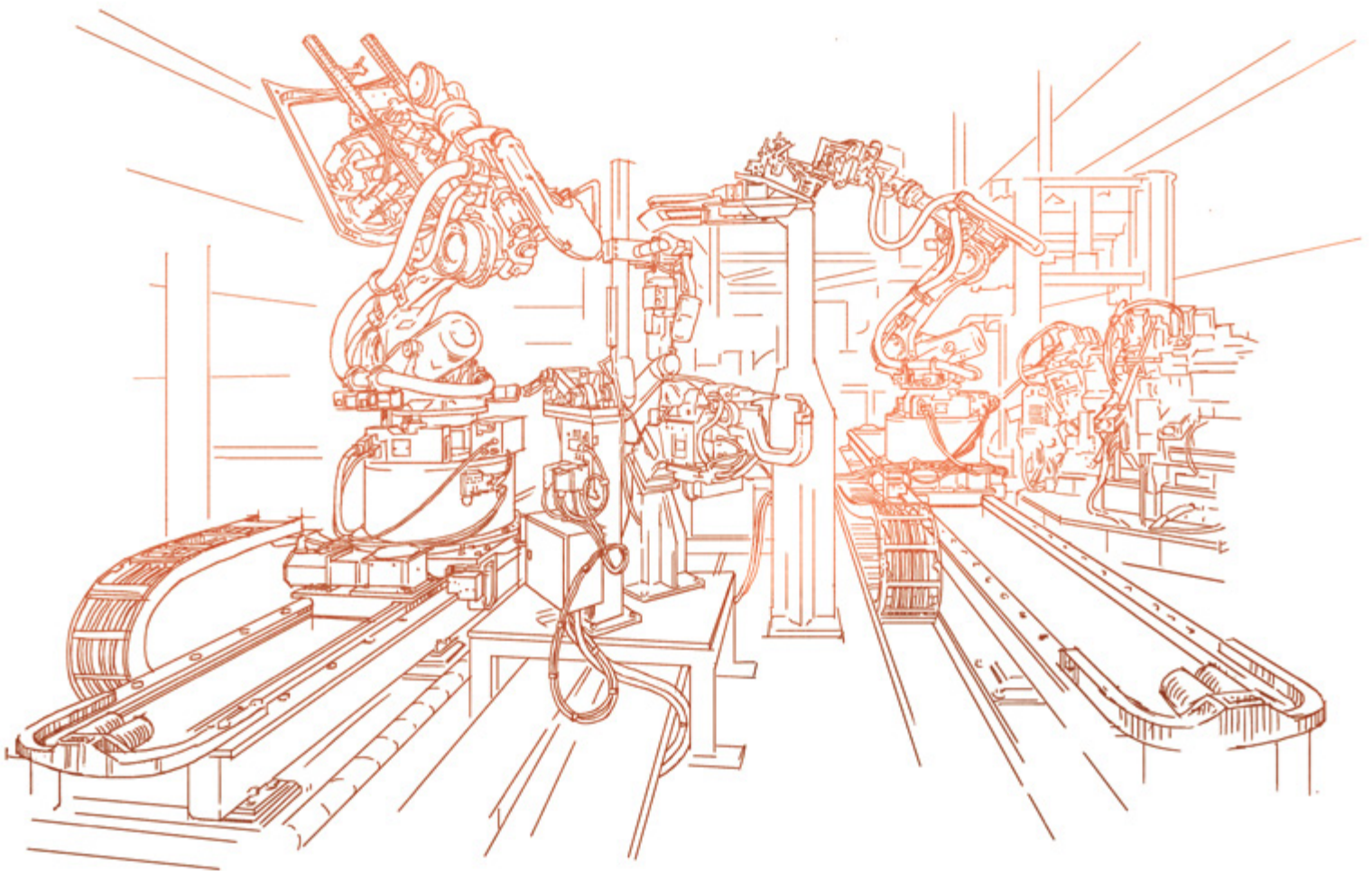


Torsion-resistant cables for robotic applications

HELUKABEL® ROBOTICS



**(Channeling
POWER)** 

Industrial robotic applications

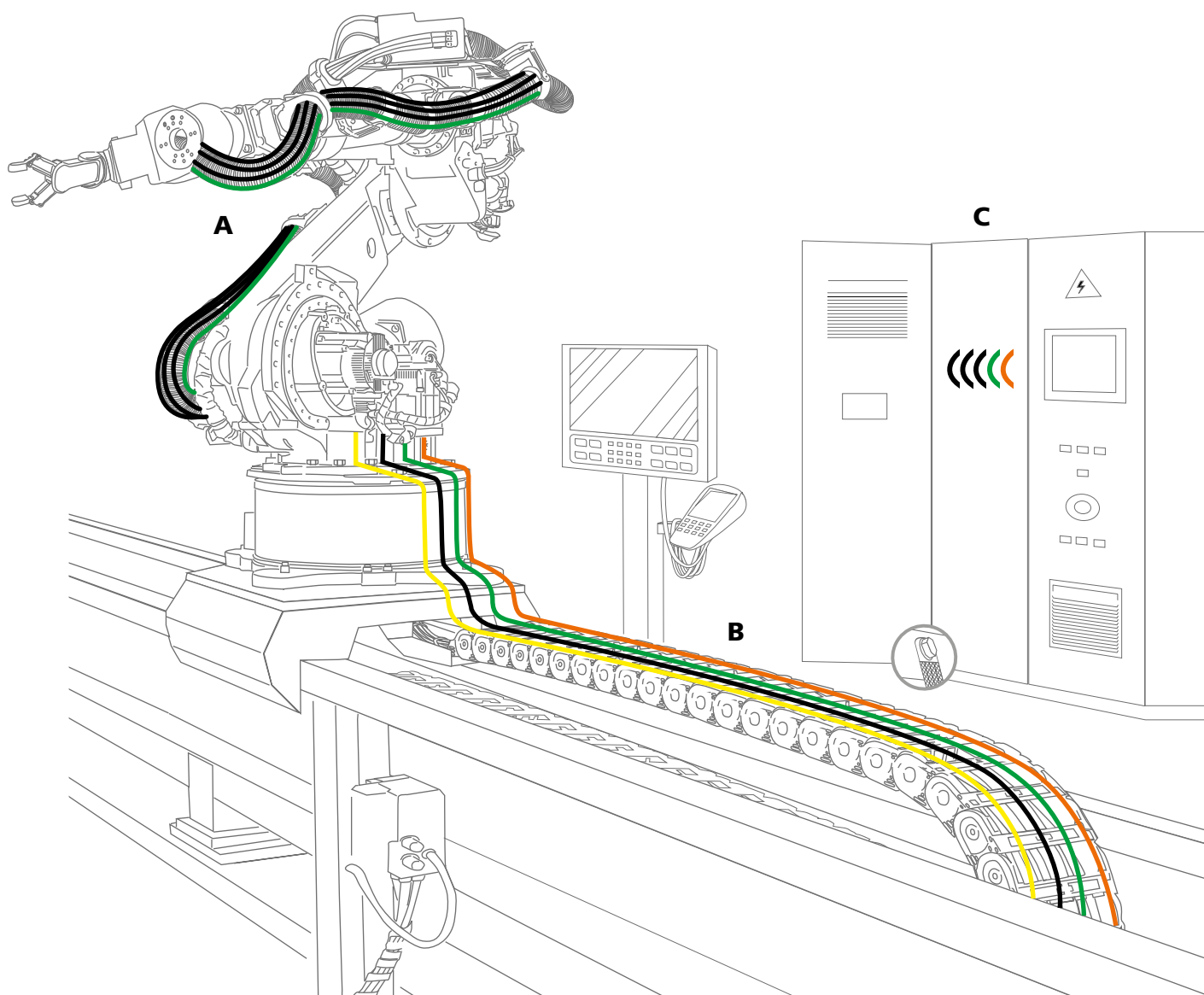
Robots are an essential part of highly dynamic manufacturing industries around the world, and it is difficult to imagine these industries without them. Robots and cobots can be found operating and interacting in close proximity with humans on production lines, but they also perform tasks independently. Modern industrial robots move in three-dimensional space and are able to carry out a great variety of tasks. In doing so, the robot, or rather the robot arm, repeats a sequence of movements millions of times. It nevertheless completes repetitive work processes with continuous precision while maintaining consistent quality – without daily variations or signs of fatigue.

In order to be able to do this, the cables in the robots must meet the highest of standards. Rapid acceleration and deceleration, tensile loads as well as combined bending and torsional movements are just a few of the operating conditions taken into account during cable design. At the same time – and depending on the application – space-saving solu-

tions are needed to feed the cables into or along the robot arm whilst maintaining the greatest possible freedom of movement. Mechanical stress as well as chemical and thermal factors often play a role here too. With our Roboflex® brand of cables, we have the right solution for a wide variety of applications. Resistance to oil, abrasion, notch and welding beads or extreme bending radii are just some of the requirements fulfilled by our cables.

HELUKABEL's assortment of cables for robotic applications includes control and motor cables of many different dimensions, hybrid cables and cables for the sensor and data, network and bus technology sectors. In addition to high levels of stock availability, HELUKABEL also offers bespoke solutions and develops cables tailored to your application.

We are also able to provide customised, assembled and ready-to-install dresspacks through our one-stop shop supplier and subsidiary, Robotec-Systems GmbH.



A Tube Dresspacks

HELUCONTROL® ROBOFLEX®-D
 HELUDATA® ROBOFLEX®-D-PAAR
 HELUPOWER® ROBOFLEX®
 HELUKAT® 100 T Tordierflex
 PROFINet Type R
 600 S PROFINet Torsion, SF/FTP, Cat. 7
 HELUcond PA12 Corrugated tube

B Drag chain - Axis 7

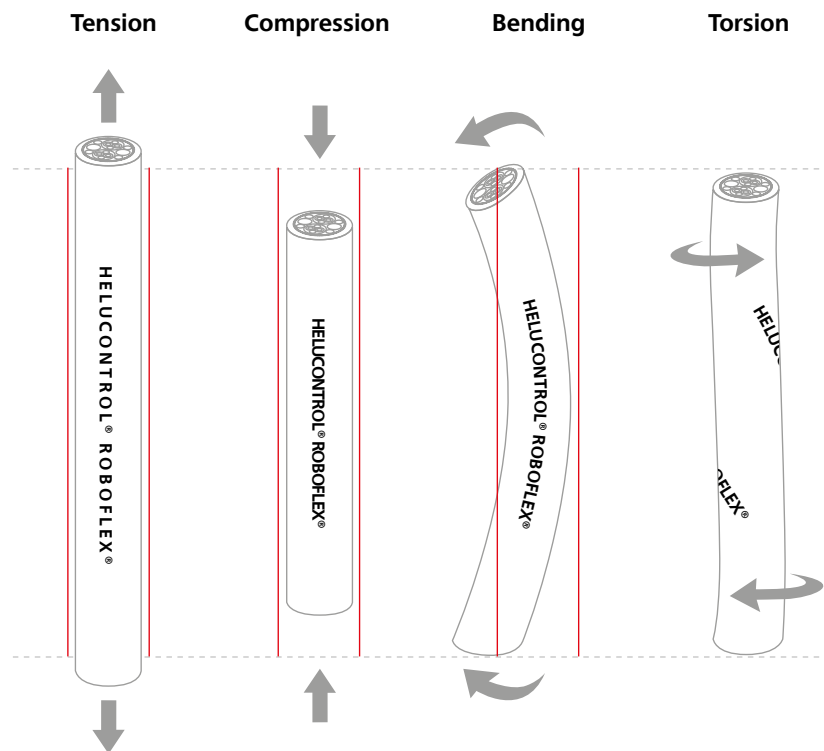
TOPSERV® Hybrid PUR
 TOPGEBER 512 PUR
 HELUKABEL® ROBOFLEX®-recycle
 MULTISPEED® 500-PUR UL/CSA
 PROFINet Type C
 HELUTOP® MS-EP4 EMV cable gland

C Switch cabinet

H07V-K / 07V-K
 FIVENORM
 PROFINet Type A or B
 Cu-Earthing strap

ROBOFLEX® – cables for highly dynamic, 3D-applications

FORCES ACTING ON CABLES AND WIRES IN ROBOTICS



The cables and wires used in robotics are subject to a variety of forces: the millions of repetitive bending and torsional movements cause high compression and tensile loads, putting considerable strain on the cables. Cable design must also take into account

rapid accelerations and decelerations which make high abrasion, notch and tear resistance essential. The high temperatures often encountered in the applications are an additional stress factor.

ROBOFLEX®- SERIES

NEW

- with UL/CSA approval
- temperature resistant to 90°C
- halogen-free

DETAILED INFORMATION:

- **Core insulation:** Polyolefin, smooth, high-quality core insulation supports sliding movement and, in conjunction with special matched lay lengths, ensures long service life under combined bending and torsional stresses
- **Outer sheath:** Special grade of full polyurethane, highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- **Resistant to:** UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, oil, greases, seawater and wastewater

Data cable, nominal voltage UL (AWM) 300V

HELUDATA® ROBOFLEX®

unscreened



Torsion load / cycles: 5 Mio. at +/- 360°/m
10 Mio. at +/- 180°/m
Bending cycles: 10 Mio.

HELUDATA® ROBOFLEX®-D

with D-screen, EMC-preferred type



Torsion load / cycles: 5 Mio. at +/- 180°/m
Bending cycles: 5 Mio.

HELUDATA® ROBOFLEX®-D-PAAR

paired, with D-screen, EMC-preferred type



Torsion load / cycles: 5 Mio. at +/- 180°/m
Bending cycles: 5 Mio.

Control cable, nominal voltage UL (AWM) 600V

HELUCONTROL® ROBOFLEX®

unscreened



Torsion load / cycles: 5 Mio. at +/- 360°/m
10 Mio. at +/- 180°/m
Bending cycles: 10 Mio.

HELUCONTROL® ROBOFLEX®-D

with D-screen, EMC-preferred type



Torsion load / cycles: 5 Mio. at +/- 180°/m
Bending cycles: 5 Mio.



Motor cable, nominal voltage UL (AWM) 1000V

HELUPOWER® ROBOFLEX®

unscreened



Torsion load / cycles: 5 Mio. at +/- 360°/m
 10 Mio. at +/- 180°/m
 Bending cycles: 10 Mio.

HELUPOWER® ROBOFLEX®-D

with D-screen, EMC-preferred type



Torsion load / cycles: 5 Mio. at +/- 180°/m
 Bending cycles: 5 Mio.

Hybrid cable for power supply and transmission of control signals

HELUPOWER® ROBOFLEX® HYBRID

unscreened



Torsion load / cycles: 5 Mio. at +/- 360°/m
 10 Mio. at +/- 180°/m
 Bending cycles: 10 Mio.

HELUPOWER® ROBOFLEX® HYBRID-D

with D-screen, EMC-preferred type



Torsion load / cycles: 5 Mio. at +/- 180°/m
 Bending cycles: 5 Mio.

Welding spark resistant sensor cable, nominal voltage UL (AWM) 300V

HELUDATA® ROBOFLEX®-recycle

unscreened



Torsion load / cycles: up to 10 Mio. at 360°/m
 Bending cycles: up to 10 Mio.

PROFINet Type R, torsion, PUR, Cat. 5e



- excellent transmission characteristics, double shielding
- applications with torsional loads, e.g. in robots
- corresponds to classification for continuous movement

100 T Tordierflex, SF/UTP, Cat. 5



- applications with torsional loads, e.g. in robots
- outstanding performance / reserve capacity, after extreme conditions
- long service life due to sophisticated design

600 S PROFINet drag chain, SF/FTP, Cat. 7

600 S PROFINet torsion, SF/FTP, Cat. 7



- recurring stress on moving machine parts / in the chain
- excellent transmission characteristics under extremely difficult conditions
- torsion design with special shield construction, torsion-optimised for use in robots

BUS CABLES

Profibus L2, torsion, highly flexible, PUR + PVC



- can be used in mobile applications / in robots
- torsion structure allows torque
- halogen-free due to PUR sheath

Multibus I, highly flexible, PUR



- special structure for use in drag chain applications and robotics in a PVC-free design
- Multibus I combines the Profibus / DeviceNet™ / Interbus bus systems as well as the power supply in a hybrid cable

Multibus II, highly flexible, PUR



- see Multibus I. With Multibus II (further development of Multibus I), bus systems Profibus / Profinet and power supply are routed in a hybrid cable.

Contact

Our product experts are available to answer your questions and provide customised solutions.



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POWER)** 