VORNBÄUMEN

BOWDEN CABLES AND SYSTEM COMPONENTS

TRADITION.
INNOVATION.
VISION.
SINCE 1889.

made in Germany

VORNBÄUMEN

CUSTOM MADE MOVEMENTS – BOWDEN CABLES FROM VORNBÄUMEN

LONG-LIFE FUNCTIONALITY THANKS TO INDIVIDUALLY ADJUSTED COMPONENTS

In many technological fields, our strands and ropes are used as actuating pulls in order to keep machines and components moving. Wherever force and movement need to be realised safely, flexibly and precisely, VORNBÄUMEN actuating pulls are in use. Over the past 20 years we have systematically continued to evolve into a developer and systems provider.

We supply precise, smooth-running and long-lasting components for your actuation application. Whether these are for the automotive industry, the aircraft industry, the bicycle market, the welding industry, mechanical and apparatus engineering or other applications. Whether this involves wires and tubes for your production, rope pull casings, strands or mini ropes with suitable cable heads for assembly at your end or readily configured rope pulls for your application.

Our production programme includes, among other things, flat and round wire spirals made of various materials, with and without lining and optionally plastified. We also manufacture push-pull systems and wire guide hoses. In particular for the bicycle industry, we manufacture rope pulls with cable heads (die-cast zinc) for brake and shifting systems. In our modern extrusion systems, we process all plastic in current use – which makes us able to supply you with the appropriate configuration for every application.
Benefit from our comprehensive expertise and many years of experience. We look forward to your project.

AUTOMOTIVE AND COMMERCIAL VEHICLES

Cable pulls are used in various assemblies in vehicle construction: as actuating pulls on window regulators, mirror and handbrake systems or on body parts. The cable and pulley systems in belt tensioners and seats are also relevant to safety. Here, VORNBÄUMEN works as a partner to system suppliers in the automotive industry, who benefit from the company's expertise and many years of experience. In addition, cable pull solutions from VORNBÄUMEN are also used in commercial vehicles - for example in door and flap mechanisms, clutch or bonnet actuators as well as in special pulling and holding systems. The requirements for durability, robustness and functionality under high loads are particularly well met here.

Flexible and reliable cable pull systems also play a key role in agricultural vehicles such as towing and harvesting machines. VORNBÄUMEN develops customised solutions for mechanical controls, cab operating elements and moving components that have to function permanently under extreme environmental conditions. Close cooperation with manufacturers makes it possible to realise customised systems for a wide range of application scenarios.

BICYCLE INDUSTRY

Actuating pulls have long been used in bicycle technology in various types of construction. In particular, rope casings of flat or round wires guarantee the direct and precise transmission of force to the brakes or shifting systems.

ROBOTICS AND AUTOMATION TECHNOLOGY

Wire ropes demonstrate their quality in industrial robots and automation systems as actuating, moving and safety pulls. In sub-areas of automation, ropes and computer-controlled winches represent a convenient and maintenance-friendly alternative to complex gearboxes and step motors.

FURTHER AREAS OF USE FOR ACTUATING PULL COMPONENTS AND SYSTEMS

- Drive technology / Materials handling technology
- Construction machinery / Agricultural machinery
- Vehicle trailers
- Marine industry
- Welding technology
- Cleaning technology
- Furniture industry / Lighting industry
- Sun protection / Awnings
- Medical technology / Rehabilitation technology
- Gate technology
- Model construction
- Jewellery industry
- and much, much more …

Push-pull and spiral cases in a great variety of configurations for precise and low-friction transmission of force in mechanical systems.

Flexible flat and round spirals made of steel, wrapped according to individual specifications.

Cable heads made of die-cast zinc transfer the movement of the pull to the component. Along with the standard designs, VORNBÄUMEN develops individual versions.

VORNBÄUMEN

SYSTEM COMPONENTS FOR BOWDEN CABLES

OVERVIEW OF ALL PRODUCTS

ROUND WIRE SPIRALS – FOR MAXIMUM FLEXIBILITY

The round wire spiral is the classical variant of the guide sleeve in actuating pulls. It consists of wound wire and is therefore able to combine the elastic properties of a spring with the guide functions of the spiral in certain applications (depending on the design). The round cross-section of the wire lends the spiral a highly homogeneous bending behaviour and ensures that it is in contact with the guided medium only at certain points, which has a positive effect on internal friction in systems without plastic linings. For that reason, the round wire spiral is often used as a welding wire guide spiral, for example. The optional plastification increases the transversal compressive rigidity of the spiral and provides protection from corrosion and contamination.

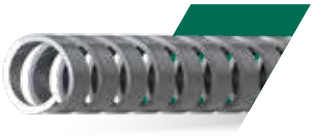
FLAT WIRE SPIRALS – FOR PRECISE FORCE TRANSMISSION

For the flat wire spiral, the round wire from our drawing mill at our parent plant in Bad Iburg is rolled to the required dimensions just before spiralisation. The contact points between the windings give the flat wire spiral greater rigidity and a lower compression set in longitudinal direction, predestining it for precise guidance and high pressure absorption. An optional lining with a plastic tube, which we also manufacture ourselves, considerably minimises the internal friction of the system and significantly increases its efficiency when the appropriate strands or ropes are used.

ALUMINIUM FLAT WIRE SPIRALS – LIGHTWEIGHT FOR BICYCLES

The aluminium flat wire spiral is our lightweight product for the bicycle industry. In applications in which every gram counts when selecting high-quality components, our aluminium flat wire spiral permits a weight reduction of 50% compared to the classic steel wire spiral.

OPEN FLAT WIRE SPIRALS – EXTRA STRONG PROTECTION



The flat wire spiral with open winding is used for additional protection of actuating pulls subjected to strong mechanical forces, and when laying cables or tubes. A customised material thickness and gradient permits the adjustment of the flexibility of the spiral to your requirements.

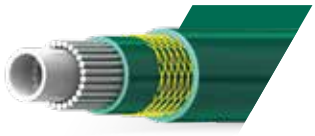
DOUBLE BLOCK SPIRALS – FOR EXTREME PRESSURE STABILITY

The guide cylinder of a double-block spiral consists of wound round and profile wire. This results in a highly flexible guide element without internal stress. The angles created in the system when the guide element is bent are compensated by the different wire profiles. The result is the maintenance of the neutral phase inside the guide element. This prevents the occurrence of axial clearance and changes in length in the system, resulting in a significantly more precise actuating movement.

PUSH-PULL CASES – MAXIMUM PRECISION FOR ACTUATING PULLS

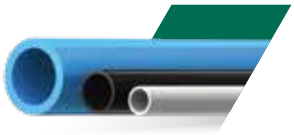
Even greater precision can be achieved in actuation and transmission applications with our push-pull cases. In contrast to the spiral, which mainly transmits tensile forces, this system also permits the transmission of compressive forces. An established application, for instance, is the precise transmission of gear shift movements, whether in derailleur gear systems for bicycles or in manual transmissions of buses, agricultural or construction machines, or in any other types of vehicles.

ALUMINIUM PUSH-PULL CASES – THE LIGHTWEIGHT PRODUCT FOR THE BICYCLE INDUSTRY



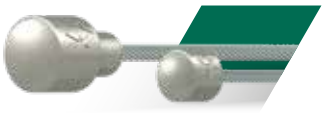
Our aluminium push-pull case is used in state-of-the-art bicycle production. By combining specific materials, we are able to reduce the weight of the push-pull case by 50% compared to the pendant with steel wires, while the shifting precision remains the same.

PLASTIC TUBES – IDEAL ANTI-FRICTION PROPERTIES



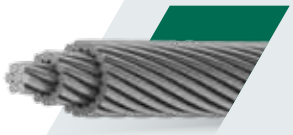
Our in-house extruded, seamless plastic tubes made of POM, HDPE/ Teflon® or Vestodur® are used to minimise friction in spirals and push-pull cases. With an additional plastic coating or braiding, they can also be used directly as a guide element for subsidiary tasks.

CABLE HEADS – THE FORM-FITTING CONNECTORS



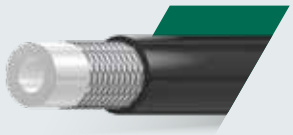
Our core competency since 1889 has been the production of steel strands and steel ropes. In order to refine these products, which have been established for many years, for use in actuation applications, our various strand and rope designs can be over-moulded with cable heads. Both independent and in-house tests have shown that combining a greased actuating pull with a suitable case with a plastic lining significantly increases force transmission efficiency within the system. Strand compaction increases the breaking force without changing the diameter.

BOWDEN CABLES AND STRANDS – PRECISION AND QUALITY FROM OUR OWN ROPE-MAKING FACILITY

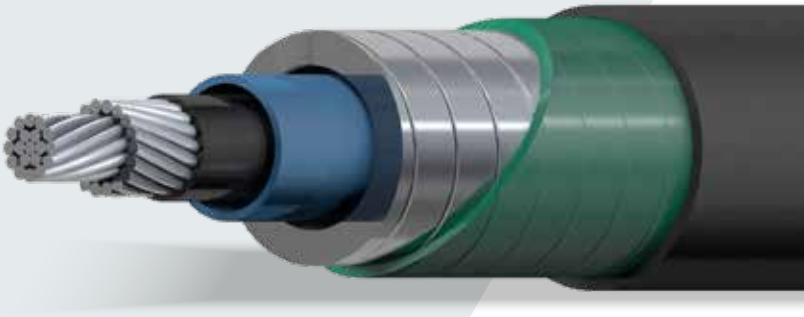


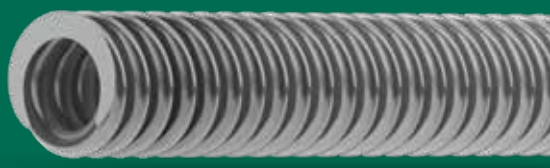
To complete our product portfolio, we ourselves manufacture Bowden cables/strands and MICROPE® micro ropes for our various actuation systems. Because we supply our own wires from our wire-drawing mill in Bad Iburg, we are set up to be flexible and are also able to offer special dimensions and constructions. Of course we have a variety of materials including steel and Nirosta available for processing. This enables us to offer ideal force transmission.

BRAKE HYDRAULIC HOSES – SAFETY FIRST



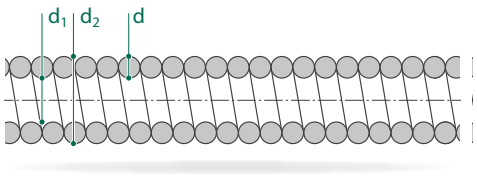
Our brake hydraulic hose with a diameter of 5 mm impresses with its extreme resilience: burst pressure ≥ 500 bar, tear-resistant up to 350 kg. The inner tube made of PVDF and the PA11 cover offer chemical resistance, while the wire braiding made of galvanised steel wires ensures maximum stability. Suitable for mineral oil, DOT 3 & 4. Operating temperature: -40 °C to +160 °C - ideal for high loads.





ROUND WIRE SPIRALS

ROUND WIRE SPIRAL



- Round wire spiral
- Bright standard
- Optionally galvanised, stainless steel, brass-coated

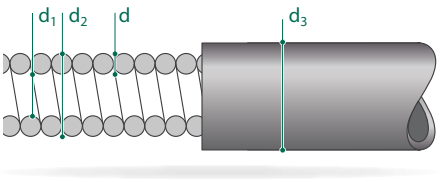
Bright, galvanised

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	8.00
Outer diameter of spiral (d_2)	2.80	13.50
Wire diameter (d)	0.50	2.50

Stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	5.90
Outer diameter of spiral (d_2)	2.80	8.70
Wire diameter (d)	0.50	1.50

PLASTIFIED ROUND WIRE SPIRAL



- Plastified round wire spiral
- Bright standard
- Optionally galvanised, stainless steel, brass-coated
- Plastic coating in PA6, PA, PE, PVC

Bright, galvanised

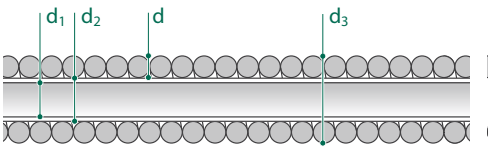
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	8.00
Outer diameter of spiral (d_2)	2.80	13.50
Outer diameter (d_3)	3.60	19.00
Wire diameter (d)	0.50	2.50

Stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	5.90
Outer diameter of spiral (d_2)	2.80	8.70
Outer diameter (d_3)	3.60	12.00
Height of flat wire (d)	0.50	1.50

ROUND WIRE SPIRALS

ROUND WIRE SPIRAL WITH LINING



- Round wire spiral
- Plastic tube lining
- Bright standard
- Optionally galvanised, stainless steel, brass-coated

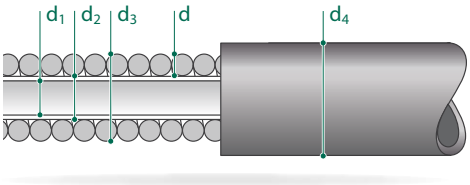
Bright, galvanised

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	8.00
Outer diameter of insert (d_2)	2.80	13.50
Outer diameter of spiral (d_3)	3.80	18.50
Wire diameter (d)	0.50	2.50

Stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	5.50
Outer diameter of insert (d_2)	2.80	8.00
Outer diameter of spiral (d_3)	3.80	10.50
Wire diameter (d)	0.50	1.40

ROUND WIRE SPIRAL WITH LINING AND PLASTIFICATION



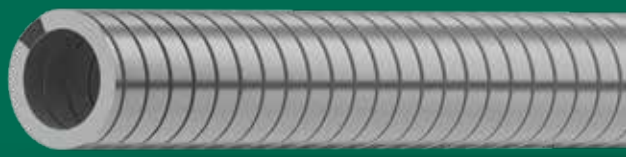
- Round wire spiral with lining, braiding and plastification
- Bright standard
- Optionally galvanised, stainless steel, brass-coated
- Lining in POM, HDPE, Teflon®
- Plastic coating in PA6, PA, PE, PVC

Bright, galvanised

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	8.00
Outer diameter of insert (d_2)	2.80	13.50
Outer diameter of spiral (d_3)	3.80	18.50
Outer diameter (d_4)	3.60	19.00
Wire diameter (d)	0.50	2.50

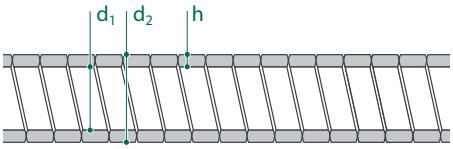
Stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	5.90
Outer diameter of insert (d_2)	2.80	8.70
Outer diameter of spiral (d_3)	3.80	10.50
Outer diameter (d_4)	3.60	12.00
Wire diameter (d)	0.50	1.40



FLAT WIRE SPIRALS

FLAT WIRE SPIRALS



- Flat wire spirals
- Bright standard
- Optionally galvanised, stainless steel, brass-coated

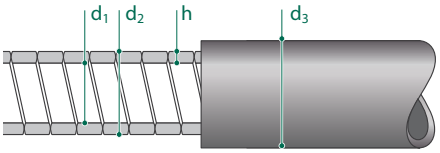
Bright, galvanised

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.50	13.00
Outer diameter (d_2)	2.00	19.00
Height of flat wire (h)	0.33	2.90

Stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.50	8.20
Outer diameter (d_2)	1.90	9.40
Height of flat wire (h)	0.33	0.60

FLAT WIRE SPIRAL WITH PLASTIFICATION



- Plastified flat wire spiral
- Bright standard
- Optionally galvanised, stainless steel, brass coated
- Plastic coating in PA6, PA, PE, PVC

Bright, galvanised

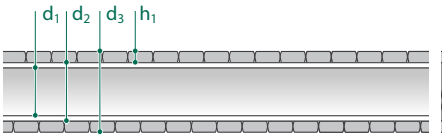
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.50	13.00
Outer diameter of spiral (d_2)	2.00	17.70
Outer diameter (d_3)	2.50	19.00
Height of flat wire (h)	0.33	2.90

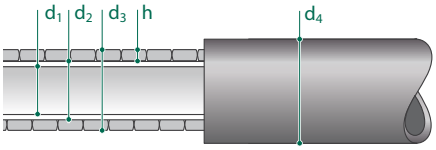
Stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.20	8.20
Outer diameter of spiral (d_2)	1.90	9.40
Outer diameter (d_3)	2.30	14.00
Height of flat wire (h)	0.33	0.60

FLAT WIRE SPIRALS

FLAT WIRE SPIRAL WITH LINING / WITH LINING AND PLASTIFICATION





- Flat wire spiral with plastification and lining
- Bright standard
- Optionally galvanised, stainless steel, brass coated
- Lining in POM, HDPE, Teflon®
- Plastic coating in PA6, PA, PE, PVC

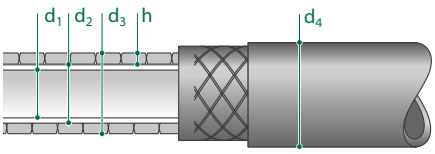
Bright, galvanised

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.50	8.50
Outer diameter of insert (d_2)	1.80	10.30
Outer diameter of spiral (d_3)	3.00	12.70
Outer diameter (d_4)	3.50	19.00
Height of flat wire (h)	0.50	1.95

Stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	2.10	2.50
Outer diameter of insert (d_2)	2.50	3.30
Outer diameter of spiral (d_3)	4.00	5.00
Outer diameter (d_4)	4.80	7.00
Height of flat wire (h)	0.60	0.80

FLAT WIRE SPIRAL WITH LINING, PLASTIFICATION AND BRAIDING



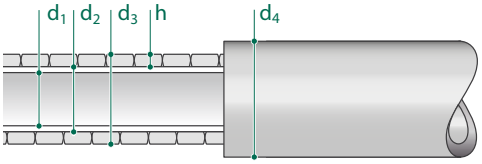
- Flat wire spiral with lining, plastification and braiding
- Bright standard
- Optionally galvanised, stainless steel, brass-coated
- Lining in POM, HDPE, Teflon®
- Plastic coating in PA6, PA, PE, PVC

Bright, galvanised, stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	2.20	2.70
Outer diameter of insert (d_2)	2.60	3.30
Outer diameter of spiral (d_3)	3.60	5.00
Outer diameter (d_4)	4.80	7.00
Height of flat wire (h)	0.50	0.85
Number of strands, braiding, piece	8.00	96.00

ALUMINIUM FLAT WIRE SPIRAL

ALUMINIUM FLAT WIRE SPIRAL WITH PLASTIC TUBE AND PLASTIFICATION



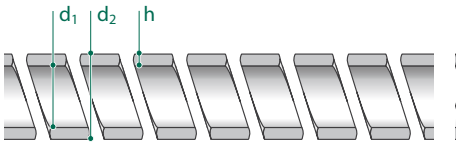
- approx. 50 % lighter
- Aluminium flat wire spirals with plastification and lining
- Lining in POM, HDPE, Teflon®
- Plastic coating in PA6, PA, PE, PVC
- Additional constructions for other areas of application available on request
- braiding optional

Aluminium

∅	Dimensions
Description	**mm**
Clear diameter (d_1)	2.10
Outer diameter of insert (d_2)	2.70
Outer diameter of spiral (d_3)	4.30
Outer diameter (d_4)	4.80
Wire diameter (h)	0.88

FLAT WIRE SPIRALS OPEN WRAPPED

FLAT WIRE SPIRAL, OPEN WRAPPED

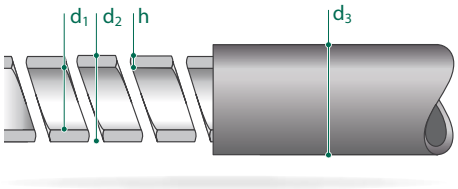


- Open flat wire spiral
- Bright standard
- Optionally galvanised, stainless steel, brass-coated

Bright, galvanised, stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	2.30	25.40
Outer diameter (d_2)	2.80	27.00
Height of flat wire (h)	0.10	6.00

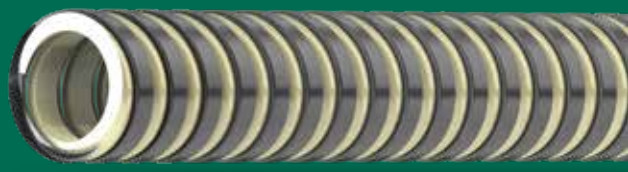
FLAT WIRE SPIRAL, OPEN WRAPPED, WITH PLASTIFICATION



- Plastified open flat wire spiral
- Bright standard
- Optionally galvanised, stainless steel, brass-coated
- Plastic coating in PA6, PA, PE

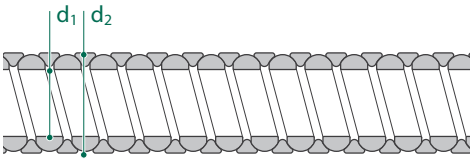
Bright, galvanised, stainless steel, brass-coated

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	2.30	9.50
Outer diameter of spiral (d_2)	2.80	11.70
Outer diameter (d_3)	3.20	16.00
Height of flat wire (h)	0.10	1.00



DOUBLE BLOCK SPIRALS

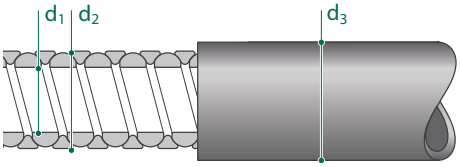
DOUBLE-BLOCK SPIRAL



∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	4.00	12.00
Outer diameter (d_2)	6.40	16.00

- Double block spiral
- Bright

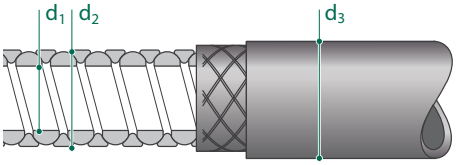
DOUBLE BLOCK SPIRAL WITH PLASTIFICATION



∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	4.00	12.00
Outer diameter of spiral (d_2)	6.40	16.00
Outer diameter (d_3)	6.40	18.00

- Double block spiral with plastification
- Bright
- Plastic coating in PA6, PA12, PE, PVC

DOUBLE BLOCK SPIRAL WITH PLASTIFICATION AND METAL BRAIDING



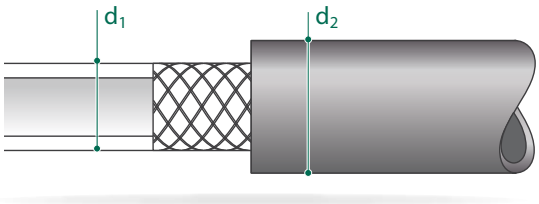
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	4.00	12.00
Outer diameter of spiral (d_2)	6.40	16.00
Outer diameter (d_3)	6.40	18.00

- Double block spiral with plastification
- Metal braiding
- Bright
- Plastic coating in PA6, PA12, PE, PVC

HYDRAULIC HOSE

HYDRAULIC HOSE

- Burst pressure: minimum: 500 bar (7250 PSI)
- Brake hose material: black PA11 plastic / white PVDF inner tube
- Wire braiding made from 16 high-strength galvanised steel wires
- Brake lever compatibility: for Magura, Shimano
- Brake calliper compatibility: for Magura, Shimano
- Brake fluid: mineral oil, DOT 3, DOT 4
- Diameter: 5 mm
- Tear resistant up to at least: 350 kg
- Temperature range: -40° C to +160° C



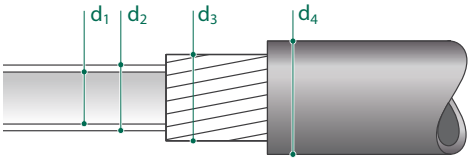
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	2.20	2.20
Outer diameter (d_2)	5.00	5.00

PUSH-PULL CASES

PUSH-PULL CASES WITH LINING AND PLASTIFICATION

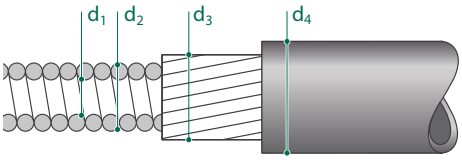
- Push-pull cases
- Lining with plastic tube in POM, HDPE, Teflon®
- Lining with flat wire spiral or round wire spiral
- Bright standard
- Optionally galvanised, stainless steel, oil hardened
- Plastic coating in PA6, PA12, PE, PP

PUSH-PULL CASE WITH PLASTIC TUBE AND PLASTIFICATION



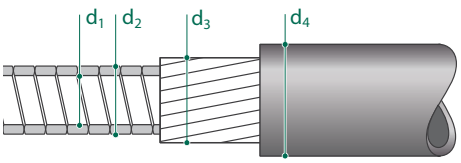
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	0.90	10.80
Outer diameter of plastic tube (d_2)	1.80	12.40
Outer diameter of push-pull wrapping (d_3)	2.40	15.20
Outer diameter (d_4)	3.90	20.00
Number of wires	16.00	30.00

PUSH-PULL CASE WITH ROUND WIRE SPIRAL AND PLASTIFICATION

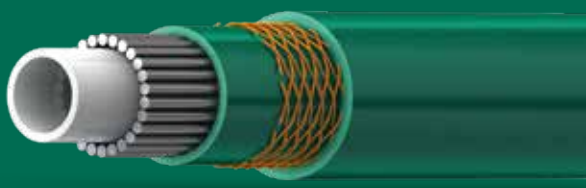


∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	5.30
Outer diameter of spiral (d_2)	2.80	14.20
Outer diameter of push-pull wrapping (d_3)	3.50	18.00
Outer diameter (d_4)	3.90	23.00
Number of wires	16.00	30.00

PUSH-PULL CASE WITH FLAT WIRE SPIRAL AND PLASTIFICATION



∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.50	12.80
Outer diameter of spiral (d_2)	2.00	17.50
Outer diameter of push-pull wrapping (d_3)	2.60	21.00
Outer diameter (d_4)	3.90	25.00
Number of wires	16.00	30.00

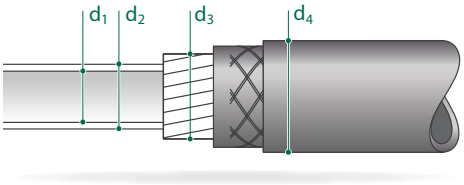


PUSH-PULL CASES

PUSH-PULL CASES WITH LINING, BRAIDING AND PLASTIFICATION

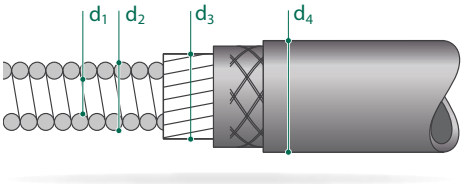
- Push-pull cases
- Lining with plastic tube in POM, HDPE, Teflon®
- Lining with flat wire spiral or round wire spiral
- Bright standard
- Optionally galvanised, stainless steel, oil hardened
- Plastic coating in PA6, PA12, PE, PP
- Optionally with multi-strand braiding

PUSH-PULL CASES WITH PLASTIC TUBE, BRAIDING AND PLASTIFICATION



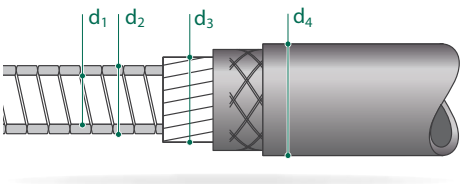
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.80	3.00
Outer diameter of plastic tube (d_2)	2.40	4.00
Outer diameter of push-pull wrapping (d_3)	3.60	5.00
Outer diameter (d_4)	4.80	7.00
Number of wires	16.00	30.00
Number of strands	8.00	96.00

PUSH-PULL CASE WITH ROUND WIRE SPIRAL, BRAIDING AND PLASTIFICATION



∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	2.00
Outer diameter of plastic tube (d_2)	2.80	4.00
Outer diameter of push-pull wrapping (d_3)	4.00	5.00
Outer diameter (d_4)	4.80	7.00
Number of wires	18.00	30.00
Number of strands	8.00	96.00

PUSH-PULL CASE WITH FLAT WIRE SPIRAL, BRAIDING AND PLASTIFICATION



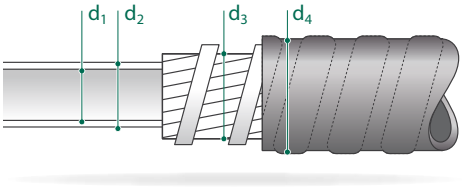
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.50	2.50
Outer diameter of plastic tube (d_2)	2.50	4.00
Outer diameter of push-pull wrapping (d_3)	3.60	5.00
Outer diameter (d_4)	4.80	7.00
Number of wires	16.00	30.00
Number of strands	8.00	96.00

PUSH-PULL CASES

PUSH-PULL CASES WITH LINING, REINFORCEMENT AND PLASTIFICATION

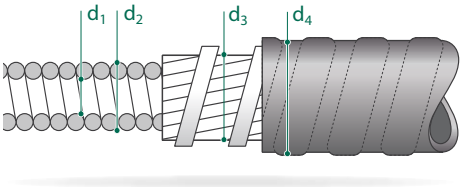
- Push-pull cases
- Lining with plastic tube in POM, HDPE, Teflon®
- Lining with flat wire spiral or round wire spiral
- Bright standard
- Optionally galvanised, stainless steel, oil hardened
- Plastic coating in PA6, PA12, PE, PP
- Optionally with wrapped or reinforced wires

PUSH-PULL CASE WITH PLASTIC TUBE, REINFORCEMENT AND PLASTIFICATION



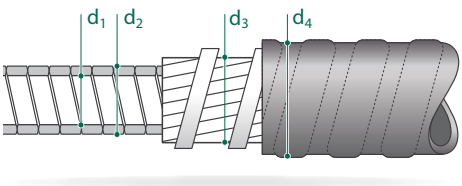
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	0.90	4.80
Outer diameter of plastic tube (d_2)	1.80	10.30
Outer diameter of push-pull wrapping (d_3)	2.40	12.60
Outer diameter (d_4)	3.90	18.00
Number of wires	16.00	30.00

PUSH-PULL CASE WITH ROUND WIRE SPIRAL, REINFORCEMENT AND PLASTIFICATION

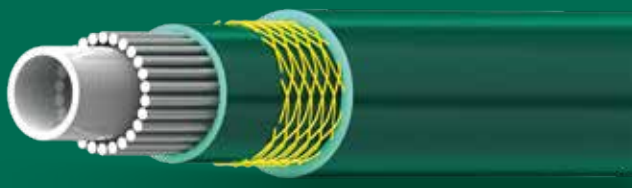


∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.30	5.30
Outer diameter of spiral (d_2)	2.80	10.30
Outer diameter of push-pull wrapping (d_3)	3.50	12.60
Outer diameter (d_4)	3.90	18.00
Number of wires	16.00	30.00

PUSH-PULL CASE WITH FLAT WIRE SPIRAL, REINFORCEMENT AND PLASTIFICATION



∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	1.50	7.00
Outer diameter of spiral (d_2)	2.00	10.30
Outer diameter of push-pull wrapping (d_3)	2.60	12.60
Outer diameter (d_4)	3.90	18.00
Number of wires	16.00	30.00

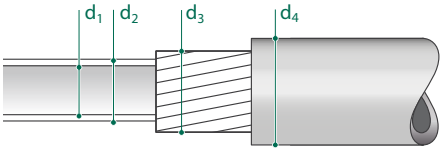


ALUMINIUM PUSH-PULL CASES

ALUMINIUM PUSH-PULL CASES

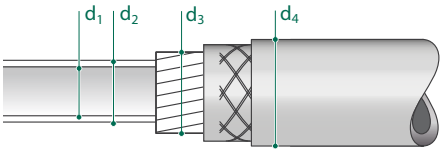
- Aluminium push-pull cases
- approx. 50 % lighter
- Lining with plastic tube in POM, HDPE, Teflon®
- Plastic coating in PA6, PA, PE, PVC
- Optionally with braiding
- Additional constructions for other areas of application available on request

ALUMINIUM PUSH-PULL CASE WITH PLASTIC TUBE AND PLASTIFICATION



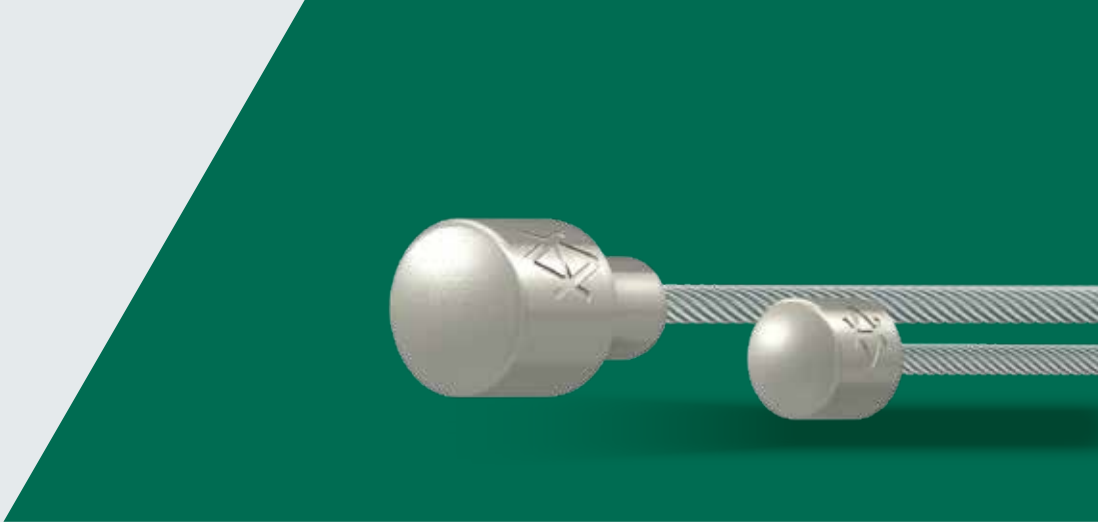
	∅
Description	**mm**
Clear diameter (d_1)	1.80
Outer diameter of insert (d_2)	2.40
Outer diameter of push-pull wrapping (d_3)	3.40
Outer diameter (d_4)	5.00
Number of wires	18.00

ALUMINIUM PUSH-PULL CASE WITH PLASTIC TUBE, PLASTIFICATION AND BRAIDING



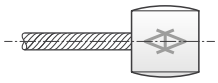
	∅
Description	**mm**
Clear diameter (d_1)	1.80
Outer diameter of insert (d_2)	2.40
Outer diameter of push-pull wrapping (d_3)	3.40
Outer diameter (d_4)	4.10
Number of wires	18.00
Number of strands	8.00 – 96.00

VORNBÄUMEN

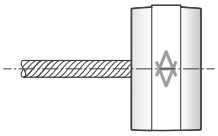


CABLE HEADS

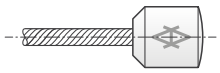
CABLE HEADS IN DIE-CAST ZINC IN STANDARD AND SPECIAL DESIGNS



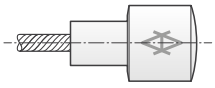
D-nipple



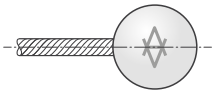
Barrel, transversal



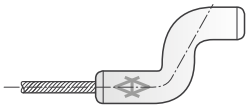
Barrel



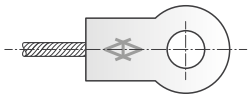
Pear



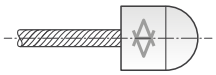
Ball



Hook



Eyelet



Half round

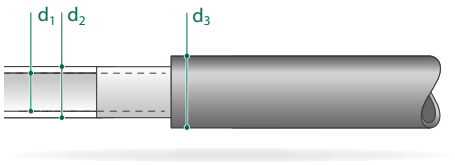
∅	from	to
Description	**mm**	**mm**
Pear	1.25	2.00
Barrel	1.04	1.90
Barrel, transversal	1.04	2.00
Ball	1.20	1.90

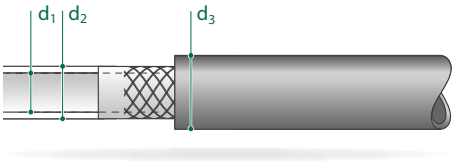
- Zinc, die-cast
- Cable ends sealed by means of weld cutting
- Pear
- Barrel / Barrel transversal
- Ball
- Hook
- Eyelet
- Half-round
- D-nipple
- On galvanised or stainless steel strand
- On stainless steel mini rope (galvanised on request)

VORNBÄUMEN

PLASTIC TUBES

PLASTIC TUBES MADE OF POM, HDPE / TEFLON®





- Seamlessy extruded
- Diameter monitored electronically
- POM, PA
- HDPE / Teflon®
- Vestodur®
- Special plastics with anti-friction additives

Tube

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	0.90	10.80
Outer diameter (d_2)	1.80	12.40

Tube with plastification

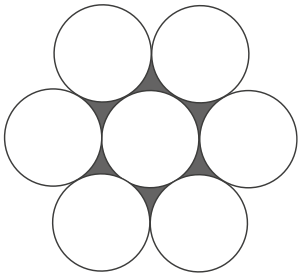
∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	0.90	10.80
Outer diameter of insert (d_2)	1.80	12.40
Outer diameter (d_3)	2.40	18.00

Tube with plastification and metal braiding

∅	from	to
Description	**mm**	**mm**
Clear diameter (d_1)	2.00	6.00
Outer diameter of insert (d_2)	4.00	7.00
Outer diameter (d_3)	6.00	9.00

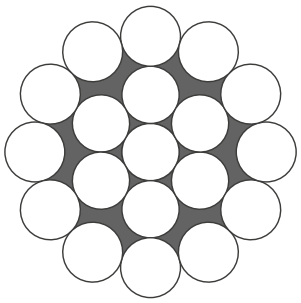
BOWDEN CABLES

SPIRAL ROPE 1 x 7



⌀	Weight	MBF 1960
mm	kg/100 m	kN
0.6	0.18	0.37
0.8	0.31	0.67
1	0.49	1.04
1.5	1.10	2.34
2	1.96	4.16
2.5	3.06	6.49
3	4.40	9.35
3.5	5.99	12.70

SPIRAL ROPE 1 x 19



⌀	Weight	MBF 1960
mm	kg/100 m	kN
1	0.49	1.03
1.3	0.76	1.61
1.5	1.09	2.32
2	1.94	4.12
2.5	3.03	6.44
3	4.37	9.28
3.5	5.94	12.60
4	7.76	16.50
5	12.10	25.80
6	17.50	37.10

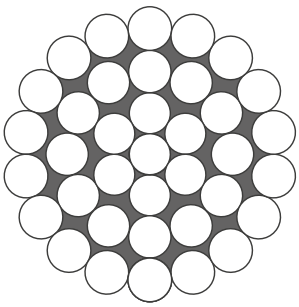
SPIRAL ROPES BY VORNBÄUMEN STANDARDS ARE GOOD. QUALITY IS BETTER.

Spiral ropes in standardised rope types according to EN specifications are the norm for us. But they are a lot more than standard! The continuous development of our manufacturing processes and production standards also ensures above-average quality in our standard rope range. At VORNBÄUMEN, the development of special and standard ropes is of mutual benefit to both, so that we are able to offer customers better results.

For many decades we have produced various standard wire ropes of steel, stainless steel, brass and iron. Computer-optimised structures mean that our products offer ideal force transmission and working life for your applications. Standard designs are available at short notice, thanks to our large warehouse. This means we are often able to help you "just in time".

Do you have any special requests? Not a problem – we are of course happy to produce customised solutions for you. Our solutions, combined with our technological capabilities and skills, always offer you the security you require. For every application!

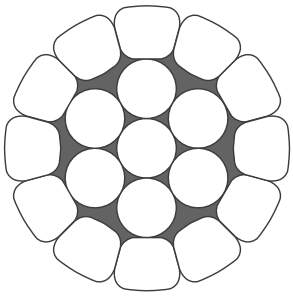
SPIRAL ROPE 1 x 37



⌀	Weight	MBF 1960
mm	kg/100 m	kN
3	4.36	9.05
4	7.74	16.10
5	12.10	25.10
6	17.40	36.20
7	23.70	49.30
8	31.00	64.30

- Optionally greased
- Optionally compacted

SPIRAL ROPE 1 x 19 compacted



⌀	Weight	MBF 1570
mm	kg/100 m	kN
1.1	0.75	1.29
1.5	1.27	2.11

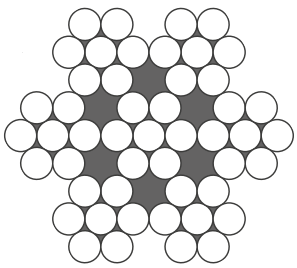
- Material Nirosta 1.4301

MICROPE®
MICRO ROPES

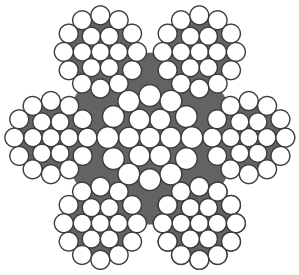
	∅	from	to
Description		mm	mm
1 x 3		0.06	0.30
1 x 7		0.06	0.42
1 x 19		0.10	0.70
3 + 9		0.12	0.56
3 x 3		0.12	0.56
3 x 7		0.19	0.85
5 x 7 + 1 x 3		0.16	1.10
6 x 7-FC/-WSC		0.18	1.25
6 x 19-FC/-WSC		0.30	2.00
7 x 7 x 7		0.81	3.75

Sample constructions

6 x 7



6 x 19M



- MICROPE® rope optionally greased
- Optionally compacted

VORNBÄUMEN MICROPE® – THE FINEST ROPES TO MEET THE HIGHEST DEMANDS

Micro ropes with wire thicknesses as low as 0.02 mm are irreplaceable in many technology sectors and technical fields. This is the case in boat or model construction, for example, but especially with high-technology domains such as precision machining technology or the automotive industry.
The preferred material is stainless steel. This is where VORNBÄUMEN can fully apply its exceptional precision and state-of-the-art manufacturing technology – as well as in special designs. Tolerances must not exceed the µm range, and customers must also be able to fully rely on us when it comes to stability. Our MICROPE® brand of micro ropes fulfils exactly these demands.

PLASTIFICATION

We coat our MICROPE® brand micro ropes with, among other materials, PVC, LDPE, HDPE, PP, PA6, PA6.12, PA11, PA12, PUR-TPU and POM. Additional constructions available upon request.

VORNBÄUMEN

BOWDEN CABLES

Custom made for every challenge.

MOVE. HOLD. ADJUST. RELEASE.

VORNBÄUMEN Bowden cables set impulses in all mechanical and and mechatronic systems. Despite electric and hydraulic actuation, Bowden cables are irreplaceable thanks to their versatility, robustness and reliability.
As a manufacturer of wires and wire ropes with many years of experience, VORNBÄUMEN develops, tests and manufactures Bowden cables and components for all areas of application, from ultra-fine wire rope systems in medical endoscopes to extremely weather-resistant locking devices for chairlifts and gondola lifts in high alpine areas.

COMPONENTS

Inner cable:
The inner cable consists of wire ropes or strands usually made of stainless steel or galvanised steel to minimise corrosion and abrasion.
Outer cover:
Our outer sheaths consist of sheathed wire spirals that guide the movement of the tension cord while protecting it from external influences such as dirt, moisture and mechanical wear. Different, customised spiral shapes provide the flexibility and resistance to suit the application.

Guide:
The inner cable is usually guided so that it can move through the Bowden tube without causing unnecessary friction losses. To reduce friction and extend service life, we use inner tubes with low frictional resistance and appropriate lubrication.

APPLICATION AREAS

- Automotive: cars, commercial vehicles, trailers
- aviation
- Agriculture and forestry
- Alpine technology
- Medical technology
- Defence technology
- Bicycle and motorbike industry
- Marine technology
- Consumer products
- Building technology
- Mechanical engineering

Push-Pull Bowden cable with flat wire spiral and liner

Push-Pull

Push-pull cable pulling sleeves offer additional stability and precision in both directions of movement thanks to embedded wires.

Heat and cold

Bowden cables must function reliably even in the event of severe temperature fluctuations. Heat protection elements or protection against frost enable use even under adverse conditions.

Bowden cable with flat wire spiral and liner

Customised Colour coding

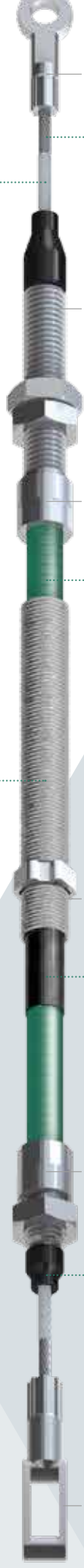
Individual colour elements facilitate maintenance and allocation in confusing installation situations.

Smoothness

The service life of the system can be significantly extended with special coatings and internal plastic tubes as well as the surface finish of the rope.

Chemical Resistance

Choosing the right materials for the rope, cover and connecting elements means that Bowden systems can also be used in chemically contaminated environments.



Force and loads

Bowden cables are adapted to the specific loads of the system. The most important factor is the diameter of the rope and the cover. The rope ends must also correspond to the required loads.

Flexibility

Flexibility is one of the core properties of Bowden cables. This allows movement to be transferred to distant mechanical elements through angled spaces. The design and dimensioning of the wire spiral largely determines the degree of flexibility of the system.

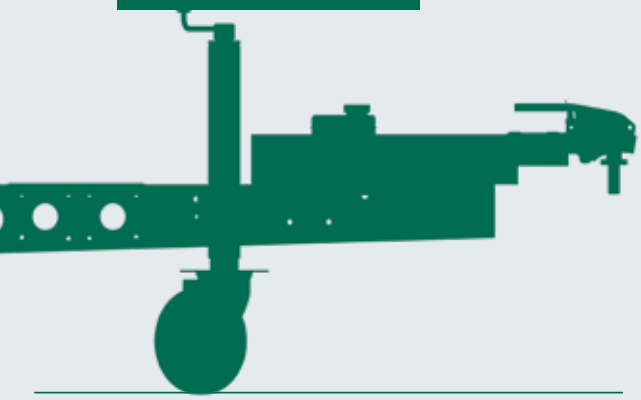
Mechanical load capacity

The choice of spiral is decisive for both flexibility and load-bearing capacity. Plastic or metal protective covers provide additional protection against abrasion.

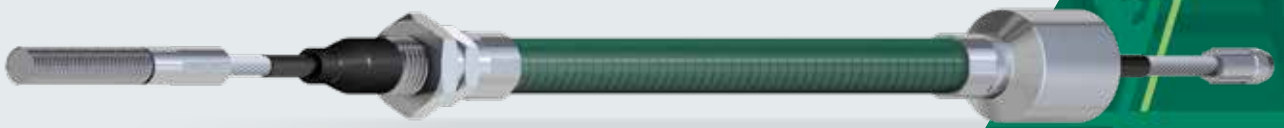
Dust and moisture

Gaskets keep dust, dirt and moisture out of the Bowden cable. This maintains manoeuvrability even under harsh conditions.

VORNBÄUMEN



TRADITION.
INNOVATION.
VISION.
SINCE 1889.



ROBUST, PRECISE, DURABLE - BOWDEN CABLES FOR VEHICLE TECHNOLOGY

Our Bowden cables come into play wherever mechanics and people have to work together precisely. In commercial vehicles, construction machinery and cars, they fulfil crucial functions - from bonnet release and seat adjustment to complex control and safety mechanisms.

We design Bowden systems for vehicle construction: vibration-resistant, corrosion-protected and temperature-resistant. Particularly in the field of construction machinery and commercial vehicles, the focus is on durability and low maintenance. Our customised solutions guarantee reliable operation even under extreme conditions - in mud, dust, frost or heat.

Bowden cable with inner cable 1x37, plastic-coated (?)

Inner tube made of polyamide tightly wound flat wire spiral, plastic sheathing, polyamide protective hose.

Rope ends / stop: metric grub screw or round eye, metric flat nuts

– 40°C
+ 60°C

Push-pull Bowden cable for mechanically triggered opening and closing of the doors of gondola cabins or chairlift hangers or bonnets. The Bowden cables must be particularly protected against moisture, as they are exposed to extreme weather conditions and the associated temperature fluctuations. Penetrating moisture can cause the cables to freeze in extreme subzero temperatures.

CABLE CAR TECHNOLOGY

Uncompromising precision and durability are particularly important in the safety-relevant area. Our systems are designed to function reliably under extreme environmental conditions - whether in ice, snow, heat or high mechanical stress. High-quality materials, corrosion-resistant components and a well thought-out design ensure minimum maintenance intervals and maximum service life.

With customised solutions, we support cable car operators and manufacturers in ensuring reliable operation in the long term, even under the most demanding conditions.

VORNBÄUMEN

VORNBÄUMEN in Bad Iburg, circa 1905

OUR ROOTS

VORNBÄUMEN in Bad Iburg

Manufacturing in Allstedt

TRADITION. INNOVATION. VISION. SINCE 1889.

Since 1889, our continuous pursuit of progress and the highest quality standards has set the benchmarks that are reflected in our products and services. Johannes and Wilhelm VORNBÄUMEN, the founders of the company, gave utmost priority to developing the company and improving production and technology right from the beginning. Thus, in 1906 they founded their own wire drawing mill to go with the ropery. This was the foundation stone for increased independence from the raw material suppliers, and the term "quality" was thus redefined. Still today we feel obligated to measure up to these standards and to the founders' researching and pioneering spirit.

In the meantime, 10,000 tonnes of steel per year are processed in our plants in Bad Iburg and Allstedt with the most modern production technology. In addition to our main products – wires and steel ropes - today we also produce Bowden spirals, push-pull spirals, and plastic tubing for the automotive industry and others. All products are developed and manufactured with state-of-the-art technology. Wire and steel ropes are used throughout the world. We will contribute to this now and in the future.

VORNBÄUMEN STEEL ROPES – A SUCCESS STORY

In the 1980s, a significant expansion was planned for the location in Bad Iburg, and now over 50,000 m^2 of production space are available to the company. A large hall for storage, confection and office space was completed in 2022. In the middle of the 1990s, we expanded our portfolio with the production location in Allstedt. Today special products for the automotive and bicycle industries are produced there.

Thanks to our close cooperation with our customers and our ability to modify production, we are able to work together with you to establish the conditions for optimal market positioning. Whether through our years of experience in standard wire ropes or our will to innovate in the area of special applications. We will find a solution to your problem.

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