Teufelberger · Redaelli

CABLE SYSTEM

TECHNICAL PRODUCT DATA

An innovative approach to cable system design combined with proven engineering expertise, professional project management and specialist cable handling and tensioning expertise has positioned Teufelberger-Redaelli – formerly well known in this market as Redaelli – to successfully deliver a variety of cable solutions to worldwide tensile structures.

Teufelberger-Redaelli's comprehensive range of structural cable systems have been developed and optimised over many years to meet the challenging and increasingly sophisticated demands of the tensile structure construction industry.

Within this publication there is access to technical data from Teufelberger-Redaelli's range of standard carbon steel, stainless steel and HDPE coated cable options with all the relevant information to support your cable system design. There is also a comprehensive range of socket anchorage options to suit a wide variety of structure constraints and site conditions. When cable and socket selection has been made, Teufelberger-Redaelli can also provide digital CAD models of the socket anchorages to assist with your design process.

Teufelberger-Redaelli's team of experienced Engineers provides the necessary engineering resource to provide a complete package approach. From up front design assist help and advice, to construction engineering, through to site installation and tensioning to inspection and maintenance services, you have the peace of mind knowing that Teufelberger-Redaelli can provide a holistic approach to link all these crucial activities together under one package.

Cable supported tensile structure applications include the 550 feet tall Las Vegas High Roller Observation Wheel, the Miami Dolphins Hard Rock Stadium, the BC Place Stadium Vancouver, major FIFA/UEFA Soccer world cup stadia and Olympic stadia.

Teufelberger-Redaelli tensile cable systems are also applied to solve complex challenges of long span bridges including the Storebælt East Bridge, Tana Bru, Dalsfjord Suspension Bridge and can also provide creation and aesthetic solutions for pedestrian/cycle bridges including the Dubai Canal Footbridges and the Scioto River Footbridge in Ohio USA.

Complex cable nets for large facades e.g. The Shed Cultural Center in New York and bracing for iconic historical structures including the Leaning Tower of Pisa are other special structures where Teufelberger-Redaelli cables provide the structural solution.

All Teufelberger-Redaelli structural cable systems are supplied in accordance with current Euro Codes also they are compliant with international standards including ASTM and American Society of Civil Engineer (ASCE). In addiction Redaelli cables also carry the reassurance of CIT and European Technical Approvals ETA-18/1122. The annual updated list of certifications is available at the link https://www.redaelli.com/company/governance/accreditations

INDEX

RANGE OF APPLICATIONS

Teufelberger-Redaelli's cable system is used in a wide range of structural applications.

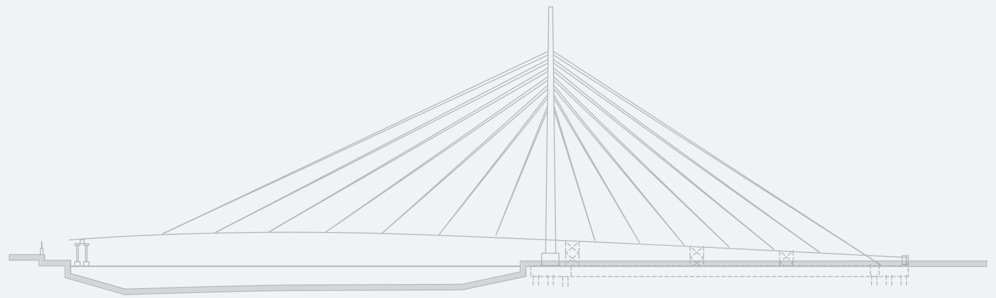
SUSPENSION BRIDGES

- Full Locked Coil ropes as main cables and hangers
- Open Spiral Strands as hangers, catwalk cables

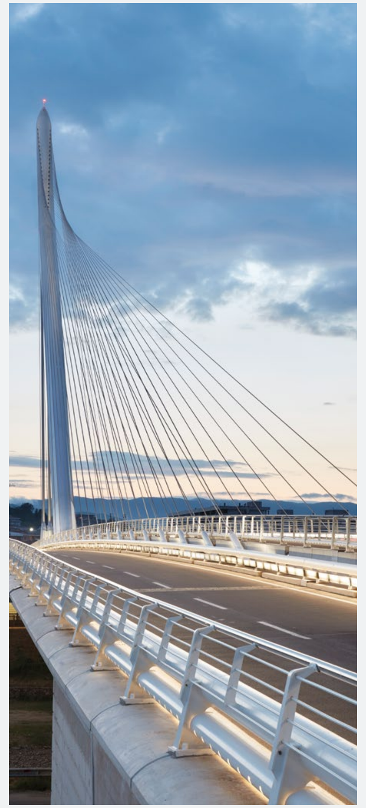
RANGE OF APPLICATIONS

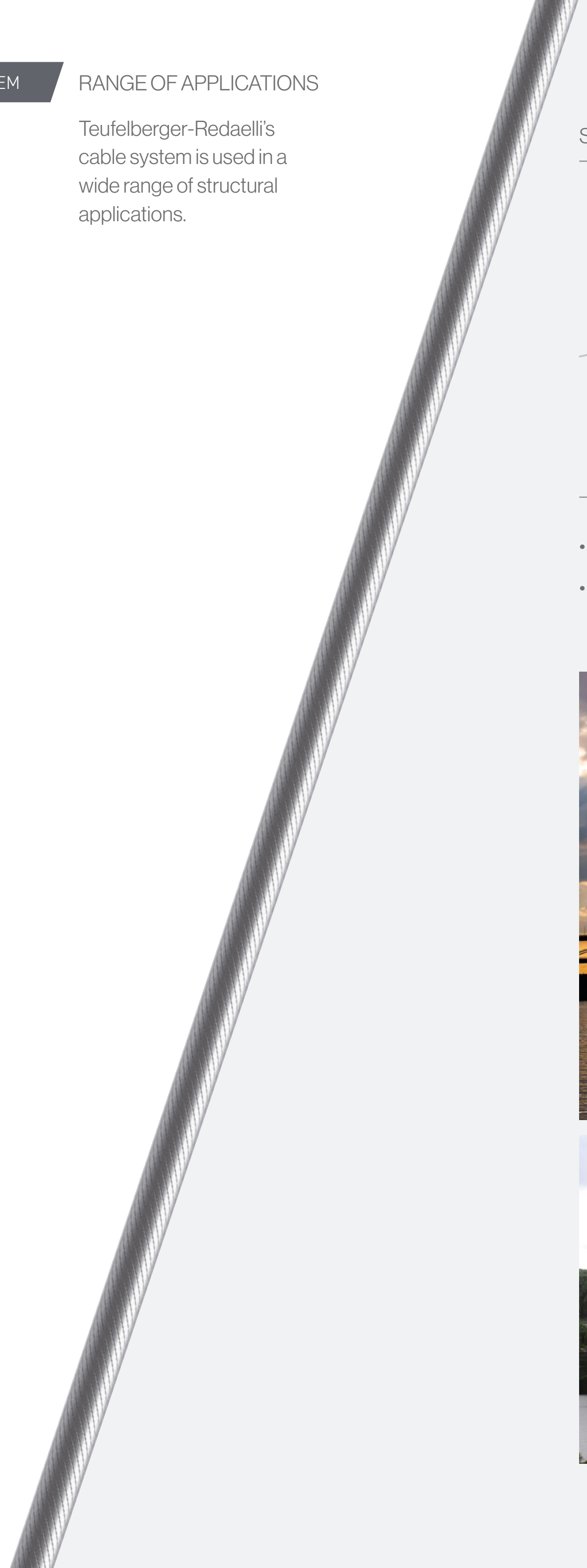
Teufelberger-Redaelli's cable system is used in a wide range of structural applications.

CABLE-STAYED BRIDGES



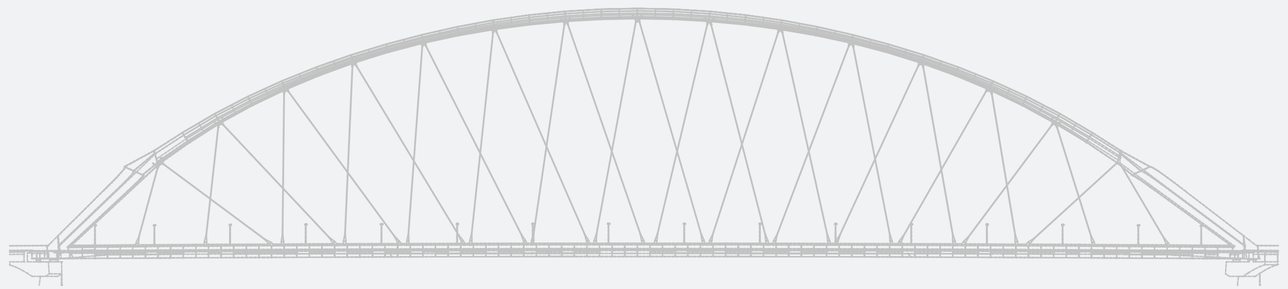
- Full Locked Coil ropes as stay cables
- Open Spiral Strands as stay cables





Teufelberger-Redaelli's cable system is used in a wide range of structural applications.

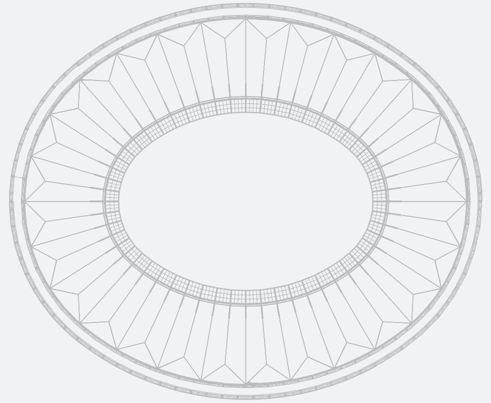
TIED ARCH BRIDGES



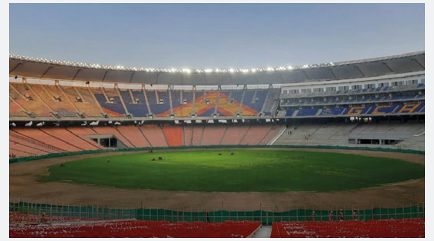
- Full Locked Coil ropes as hanger cables
- Open Spiral Strands as hanger cables

Teufelberger-Redaelli's cable system is used in a wide range of structural applications.

ROOF STRUCTURES



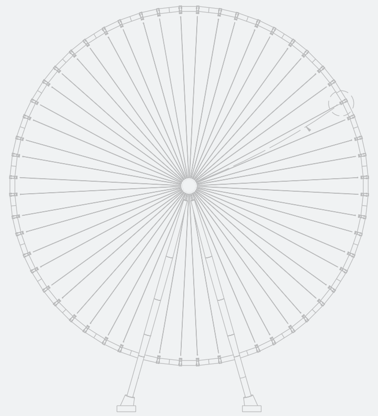
- Full Locked Coil ropes as tension ring and radial cables, edge cables, valley cables, hangers and stay cables
- Open Spiral Strands as radial cables, edge cables, valley cables, hangers and stay cables



RANGE OF APPLICATIONS

Teufelberger-Redaelli's cable system is used in a wide range of structural applications.

OBSERVATION WHEELS

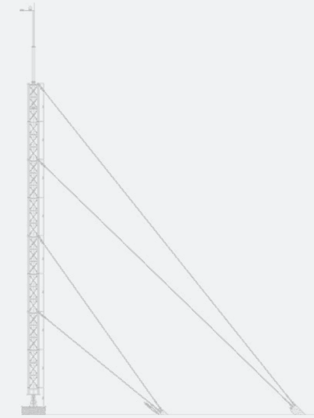


- Full Locked Coil ropes as spoke cables and stay cables, rotational spoke cables and tieback cables
- Open Spiral Strands as hangers, catwalk cables

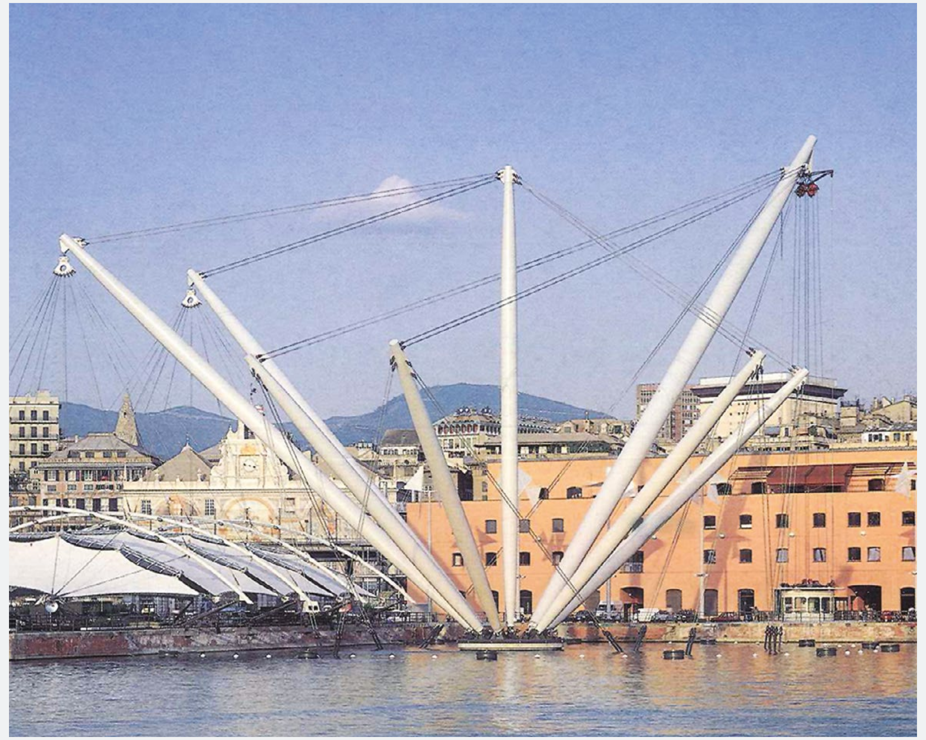
RANGE OF APPLICATIONS

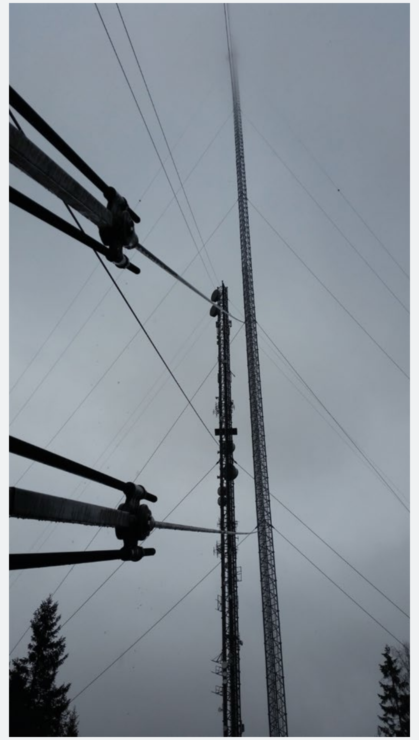
Teufelberger-Redaelli's cable system is used in a wide range of structural applications.

STAYED MASTS AND TOWERS



- Full Locked Coil ropes as stay cables
- Open Spiral Strands as stay cables

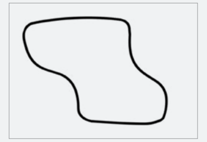




Teufelberger-Redaelli Full Locked Coil (FLC) ropes are manufactured using a combination of helically wound, hot-dip galvanised, high strength steel round wires and interlocking Z-shaped wires. The outer layers of Z-shaped wires are generally spun in opposite directions around a central core of round wires. Each individual wire is tested and verified for tensile strength, ductility, elongation at fracture, bending, torsional properties and adhesion of zinc coating in accordance with EN 10264 and EN 12385-10. Main properties: excellent axial stiffness, optimum strength to weight ratio, excellent fatigue resistance, torque balanced, excellent resistance to lateral forces meaning most suitable for cable clamping.

"Z" SHAPED WIRES

Characteristics:
Rolled to required diameter
Minimum Tensile Strength 1570 N/mm²



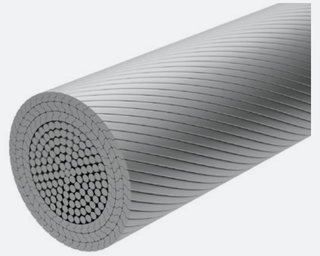
4-Stages Corrosion protection system:

- Locking of the cable's external surface due to closed configuration of Z-shaped wires
- Zinc (Zn) and Zinc Aluminium (95% Zn / 5% Al) hot dip coating of individual wires
- Internal zinc rich corrosion inhibitor compound applied during the cable standing process
- Vacuum extruded or co-extruded High Density Polyethylene (HDPE) sheathing-optional
- Additional site applied surface corrosion protection system using Tensocoat-optional

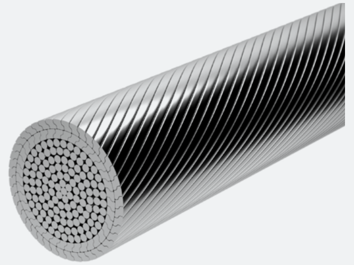
Reference standards for FLC cable design: EN 12385-10, EN 1993-1-8, EN 1993-1-9, EN 1993-1-11.

3 different cables construction:

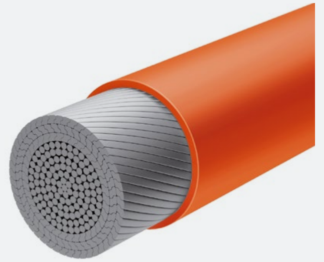
FULL LOCKED COIL ROPE
HIGH STRENGTH STEEL (FLC)



FULL LOCKED COIL ROPE
STAINLESS STEEL (FLX)



FULL LOCKED COIL ROPE WITH HDPE
(FLCH)



Each strand master batch is sample tested to validate the minimum breaking force according to EN 12385-1.
Additional tests are optional to verify other cable properties including:

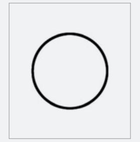
- Fatigue test
- Long-term creep test
- Clamp slippage friction test
- Fire resistance test

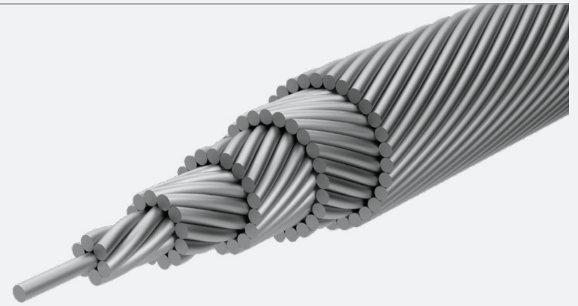
Teufelberger-Redaelli has developed a large data bank of such cable test results across a full range of several diameters.
Customised cable designs are also available to suit customer project specific requirements and specifications.
For all other corrosion protection systems we ask you to refer to the cable system data sheets, where the technical specification are reported in detail.

Teufelberger-Redaelli Open Spiral Strands (OSS) are manufactured using helically wound, hot-dip galvanised high strength steel round wires which are generally spun in opposite directions around a central core. Each individual wire is tested and verified for tensile strength, ductility, elongation at fracture, bending, torsional properties and adhesion of zinc coating in accordance with EN 10264 and EN 12385-10. Main properties: high axial stiffness, high strength to weight ratio, high fatigue resistance, torque balanced.

ROUND WIRES

Characteristics:
Drawn to required diameter (typically 5 mm)
Minimum Tensile Strength 1570 N/mm²





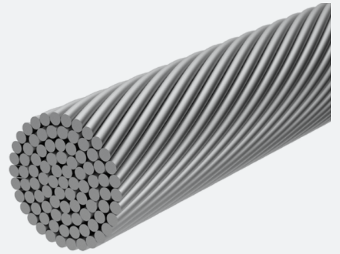
3-Stages Corrosion protection system:

- Zinc (Zn) and Zinc Aluminium (95% Zn / 5% Al) hot dip coating of individual wires
- Internal zinc rich corrosion inhibitor compound applied during the cable standing process
- Vacuum extruded or co-extruded High Density Polyethylene (HDPE) sheathing-optional
- Additional site applied surface corrosion protection system using Tensocoat-optional

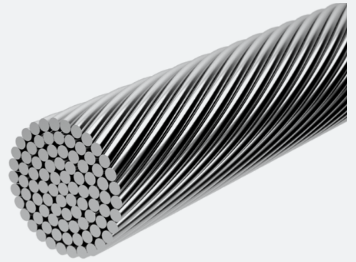
Reference standards for OSS cable design: EN 12385-10, EN 1993-1-8, EN 1993-1-9, EN 1993-1-11.

3 different cables construction:

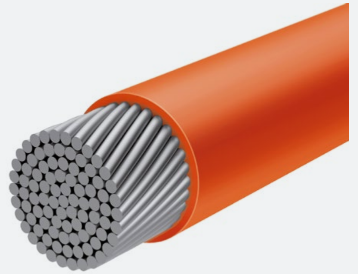
OPEN SPIRAL STRAND
HIGH STRENGTH STEEL (OSS)



OPEN SPIRAL STRAND STAINLESS STEEL
(OSX)



OPEN SPIRAL STRAND WITH HDPE
(OSSH)



Each strand master batch is sample tested to validate the minimum breaking force according to EN 12385-1.
Additional tests are optional to verify other cable properties including:

- Fatigue test
- Long-term creep test
- Clamp slippage friction test
- Fire resistance test

Teufelberger-Redaelli has developed a large data bank of such cable test results across several diameters.
Bespoke cable designs are also available to suit customer project specific requirements and specifications.
For all other corrosion protection systems we ask you to refer to the cable system data sheets, where the technical specification are reported in detail.

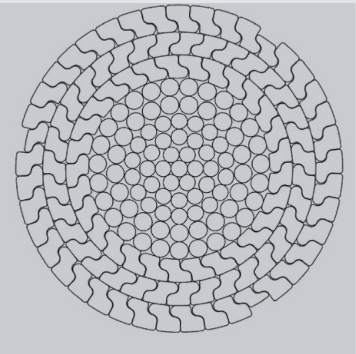
FLC WITH ANTI-VIBRATION GROOVES

Given their main characteristics (small cross section, small mass and lack of bending stiffness), cables are structural elements that can be sensitive to vibrations. Although there is a wide range of cables vibration mechanisms, they can be broadly grouped into those generated by wind and those related to the loading of the structure. Several countermeasures can be adopted to prevent wind induced cable vibrations.

Longer cables are more susceptible to vibrations, due to their larger wind exposure and lower damping values. Reference is made to EN 1993-1-11 for wind effects to be considered in design of structures with tension components.

Industry studies and experimental evidence suggest that the creation of water rivulets along cables length modify the apparent shape of cable's cross section and therefore potentially initiate vibration phenomena known as rain-wind-induced vibrations. Rain-wind-induced vibrations can reach significantly large amplitudes and cause long-term performance issues to the structure.

Surface modification of the cables is an effective countermeasure. Disrupting the rivulets by adding depressed wires on the cable shape is an effective way to reduce rain-wind vibrations.



CORROSION PROTECTION

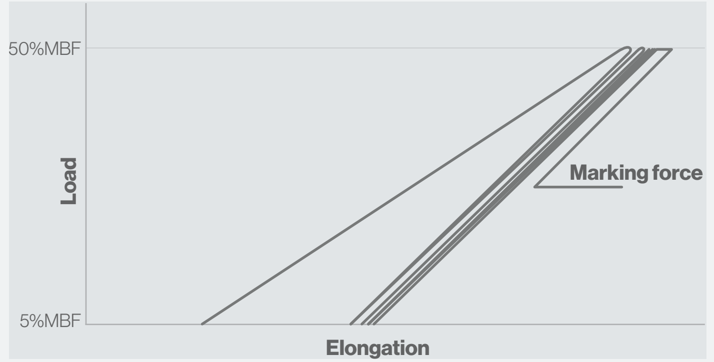
Long-term corrosion protection is ensured for each component part of the overall cable system. The end anchorages and clamps are carefully designed to avoid water traps in localised areas. Appropriate materials are used as corrosion protection of each element of the prefabricated cable.

PRE-STRETCHING, MEASURING AND MARKING

Cables are prestretched (prestressed) to remove the initial inelastic elongation inherent in the helical structure of the strand and to stabilize the strand modulus of elasticity.

The master length of strand is cyclically pulled with a force ranging from approx. 5% to 50-55% of the strand minimum breaking force for five or more times. After the last pre-stretching cycle, the strand is marked under preload: the axial force is lowered to the marking force for the individual cable lengths. The strand master length is then measured and marked for final cutting and for positioning of intermediate clamps, if required. The measurement method allows for the automatic compensation of the thermal elongation, and it is performed in monitored thermal condition.

PRE-STRETCHING CYCLES



The load cycles and pulling forces are automatically controlled and temperature is constantly monitored.

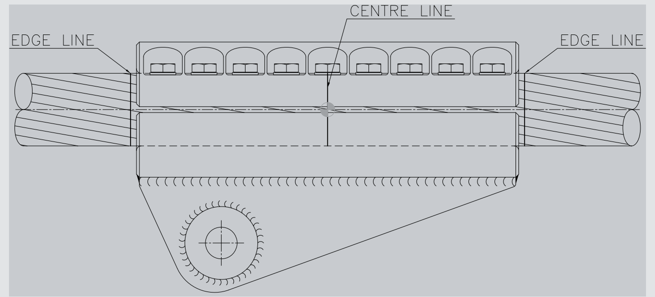
The standard individual cable assembly length tolerance (mm) after the pre-stretching, including the sockets is:

$$\pm\left(\sqrt{L[\mathrm{m}]}+5\right)[mm]$$

L is the length of the individual cable assembly in metres. The accuracy of the cable length can be changed according to Client's specific requirements.

Cable marking lengths consider the following effects to reduce manufacturing tolerances:

- Reference temperature during marking relative to temperature used in static calculation.
- Expected long-term creep of the cable.
- Setting of the pouring cone of the socket.



SOCKETING

Cables are terminated to the sockets by means of three possible methods:

- Spelter socketing by polyester resin for structural use with minimum 100% efficiency to the strand minimum breaking force. In accordance with EN 13411-4.
- Spelter socketing by poured hot zinc or zinc alloy with minimum 100% efficiency to the strand minimum breaking force. In accordance with EN 13411-4.
- Swaged (pressed) socketing with minimum 90% efficiency to the strand minimum breaking force. In accordance with EN 13411-8.

Spelter socketing involves the following manufacturing operations:

1. The wires at the strand end are opened to form a "brush".
2. The brush is ultrasonically cleaned.
3. The brush is positioned inside the internal cone profile of the socket.
4. Structural polyester resin or zinc / zinc alloy is poured into the socket wires to form a socket cone.
5. The solid cone that is created transfers the load between cable and socket.

There are no mechanical wedges, grips, serrations or connections used in the socketing process, meaning there is no mechanical damaging of the wires within the strands at this safety critical area.

Whilst the structural efficiency of resin and zinc / zinc alloy socketing is the same, there are some differences to be considered in the selection of the preferred method:

- Resin is cold process and zinc / zinc alloy is a molten hot metal pour, meaning pouring resin is inherently safer than pouring zinc / zinc alloy.
- Resin is more efficient to produce because of the relative curing time compared to zinc / zinc alloy.
- Zinc / zinc alloy is poured at a temperature of approximately 450 °C, therefore sockets must be pre-heated before socketing operations begin.
- Where there is a requirement for painted sockets, pre-heating the sockets is not possible, therefore resin socketing is the only available choice.
- Resin is recommended for HDPE sheathed cables because of the high temperatures of the poured zinc / zinc alloy can melt and damage the polyethylene.

Socketing by swaging is performed by pressing the section of sockets with the cable termination inside. This method reduces the cable system's resistance by 10% of strand minimum breaking force.

All sockets connections are designed to have a breaking force higher than that of the respective strand.

CABLE ELONGATION INFORMATION

Cables have to be axially loaded in order to measure their executive length. In their unloaded condition, cables have a non-linear load / elongation behaviour.

There are several contributions to cable elongation:

- Initial non elastic elongation: elongation due to the bedding down of wires in a new cable loaded for the first time (related to the cable construction). Non elastic elongation is removed after pre-stretching.
- Elastic Elongation: where cables extend approximately in line with Hookes Law (stress is proportional to strain) until the Elastic Limit is reached. Modulus of Elasticity is stabilised after pre-stretching.

$$\Delta l_e = \frac{\Delta N}{EA}\cdot L$$

Where ΔN = load increase (kN)
L = cable length (mm)
E = cable elastic modulus (kN/mm^2)
A = metallic cross section (mm^2)
Δl_e = elastic elongation (mm)

- Creep Elongation: this is a continued and irreversible extension of cables when subjected to constant, long-term static loading (related to material properties and load). Cable creep takes place during a time that depends on different factors (e.g. the level of loading, the number of loads, ambient temperature, temperature swing). During erection, it may be necessary to load cables to a higher initial load to compensate for on-going and future cable creep.
- Thermal Elongation and Contraction: the change of a length *L* (mm) of cable produced by a temperature change.

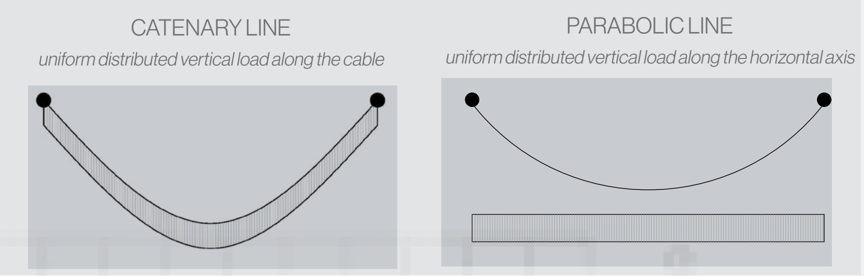
$$\Delta l_t = \alpha\cdot\Delta t\cdot L$$

Where α = coefficient of linear thermal expansion (°C^{-1})
Δt = temperature change (°C)
L = cable length (mm)

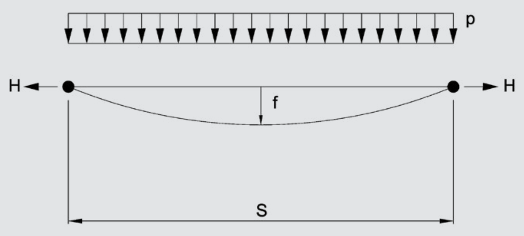
α = 12 x 10-6 for °C for steel wires
α = 16 x 10-6 for °C for stainless steel wires

CABLE CATENARY LENGTH CALCULATION

Cables can adapt to different geometric configuration if correctly loaded as they automatically follow the force distribution (form active shape).



The catenary shape of a uniform cable hanging under its self-weight between two supports is studied considering a homogeneous and flexible element bearing a uniformly distributed load. If the profile is flat (f/L<1/8) the catenary length of the cable can be calculated using the simplified approach:

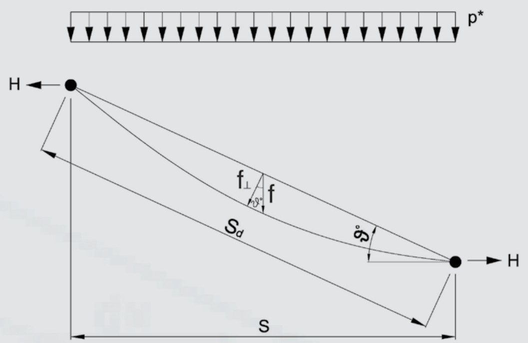


$$H = \frac{ps^2}{8f}$$

The resulting formula is:

$$l = s\left[1 + \frac{8}{3}\left(\frac{f}{s}\right)^2\right]$$

Where *l* is the cable length



$$H = \frac{p^* s^2}{8f}$$

The resulting formula is:

$$l = s_d\left[1 + \frac{8}{3}\left(\frac{f_\perp}{s_d}\right)^2\right]$$

$$s = s_d \cos\vartheta$$

$$f_\perp = f\cos\vartheta$$

Where *l* is the cable length

CABLE LABORATORY TESTING

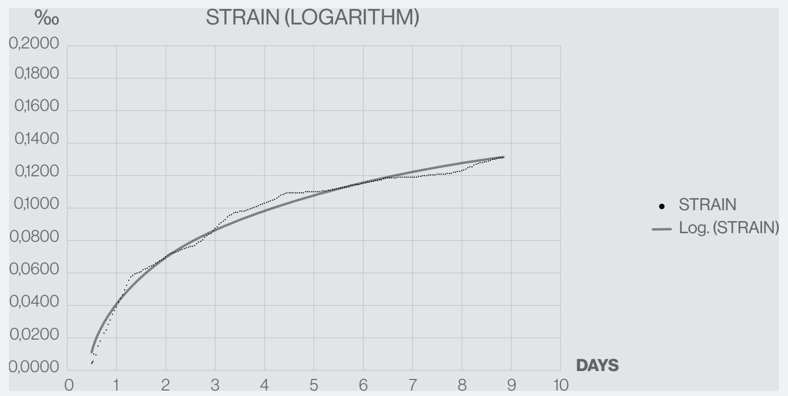
Teufelberger-Redaelli has a comprehensive database of tests performed on different cable system arrangements and cable diameters. Each manufactured cable is tested to validate the minimum breaking force and the modulus of elasticity according to EN 12385-1 (E+R test). Additional tests can verify other cable properties. Teufelberger-Redaelli has established strong relationships with testing laboratories, both national and international, where minimum breaking force tests can be performed. Where required, third part test certification can be supplied.

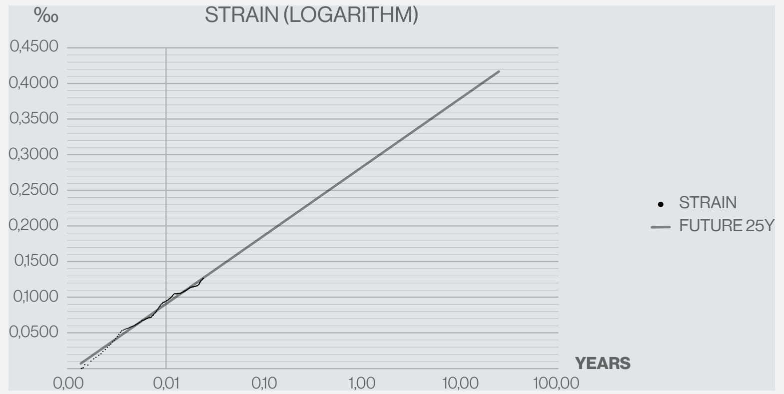
Tensile and modulus test (E+R test)

E+R tests are performed to measure cable's modulus of elasticity (E) and actual breaking force (ABF) according to EN12385-1. A cable sample is taken from the master length production batch and fitted with laboratory sockets or sockets equivalent to the permanent ones. The elongation of the cable is measured by means of an extensometer installed in the middle of the specimen. Position transducers may also be located at sockets edge to evaluate the cone setting. Other geometric characteristics (cable diameter, socket geometry, ecc.) are measured as well.

Long-Term Test

Long-term tests are performed in order to define the actual creep coefficient and long-term behaviour of the cable system. Again a cable sample is taken from the master length production batch and fitted with laboratory sockets or sockets equivalent to the permanent ones. The elongation of the cable is measured by means of an extensometer installed in the middle of the specimen. After the pre-stretching cycles, which are performed to remove the initial inelastic deformation, a load approximately equal to 40% of the strand minimum breaking force is kept constant throughout the test, for minimum 200 hours. The test is completed when the partial elongation between two consecutive readings is stabilised.





The results obtained from long-term tests are processed to obtain the logarithmic function simulating the creep development after 5 or 10 years. (200 h).

Cable Fatigue Test

Fatigue tests are performed to verify the effective durability behaviour of the cable system, generally by means of a tension – tension fatigue test. As fatigue failure usually occurs adjacent to the socket anchorages, the cable test sample is usually fitted with permanent sockets, reproducing the actual flexural effects or traverse stresses that the cable will see in service. The specimen is installed into a tensile test machine which applies cyclic loads according to relevant test specifications.

Fatigue tests are usually executed to comply with the requirements of EN 1993-1-11 and typically include the following pass / fail criteria:

- Number of the broken wires after 2,000,000 cycles should be less than 2% of the total.
- No failure in the socketing material or in any component of the socket anchorage.
- The sample should be capable to generate a minimum breaking force equal to 92% of the strand Actual Breaking Force or 95% of the strand minimum breaking force – whichever is greater.

Type of test	Fatigue loading before fracture test
Axial test (class 3 and 4 according to EN 1993-1-11)	σsup = 0,45 σuk Δσ according to Δσc in the following Table Δα = 0 n = $2x10^6$ cycles
Axial and Flexural test (class 5 according to EN 1993-1-11)	σsup = 0,45 σuk Δσ according to Δσc in the following Table Δα = 0 – 10 milli radians (0 – 0,7 degrees) N = $2 x 10^6$ cycles

Group	Tension components		Detail category Δσc (N/mm^2)
B	2	Full locked coil ropes with metal or resin socketing	150
	3	Spiral strands with metal or resin socketing	150

Cable Clamp Slippage Test

Slippage tests determine the exact value of slippage force on ring cable connector, radial cable clamps or similar components. Clamps and bolts equal to permanent ones are installed on cable specimen, following the agreed installation procedure and bolts are tensioned in sequence.

The cable sample should have the same characteristics as the cables delivered to site. The actual installation method for the clamps should also be accurately simulated within the laboratory. Bolts can be instrumented to monitor the actual tightening force during tests.

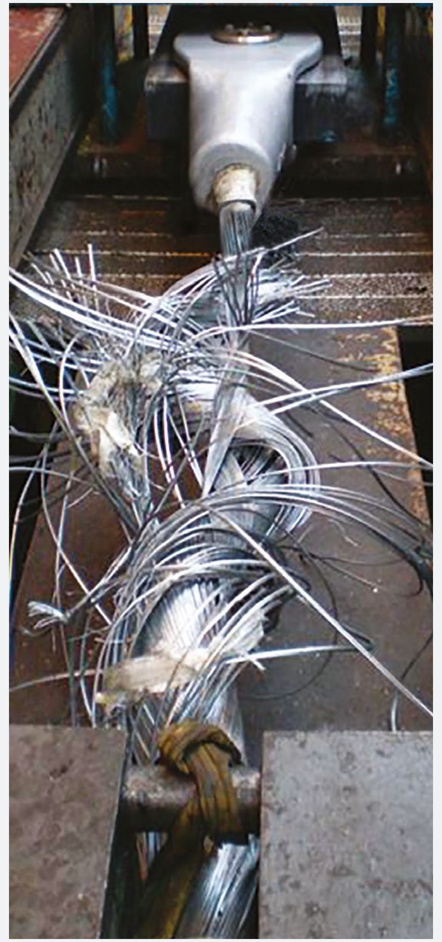
Fire Resistance Test

Fire resistance tests are useful to analyse cables and sockets resistance under fire conditions with different socketing materials (i.e. polyester resin and zinc / zinc alloy) and to identify the most critical structural details under a constant load. The tests are performed on cables and their terminations under a heavy thermal transient simulating a fire scenario. The fire load could be identified, for instance, by the curve ISO 834 which is normally used for civil applications.

The curve that represents the gradient of the air temperature during the burning process is analytically:

- $T = T_o + 345 * Log_{10}(8xT_m + 1)$
- T_o environment temperature at the starting point
- T_m time duration in min

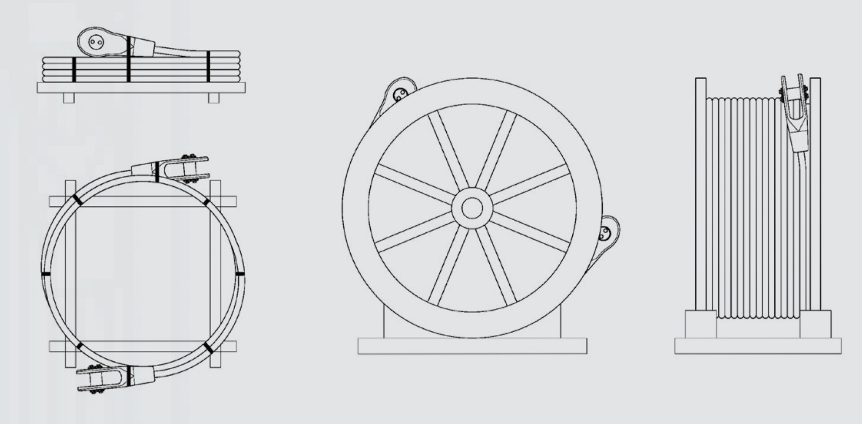
Time to failure is determined for different types of sockets materials and compared with the time to failure of the cable.



DELIVERY AND PACKAGING

Teufelberger-Redaelli cables are delivered as a prefabricated system, which enables a simple, rapid cable installation and tensioning process. Cables are delivered to site in coils or reels, either made of steel or wood, protected to prevent mechanical damage and contamination from external elements such as dust or sand during transportation.

Teufelberger-Redaelli's technical department, as standard procedure, develops for each project a loading and unloading manual, which includes the precautions that should be taken during cable handling. Sockets ancillaries and accessories are delivered in pallets or crates.



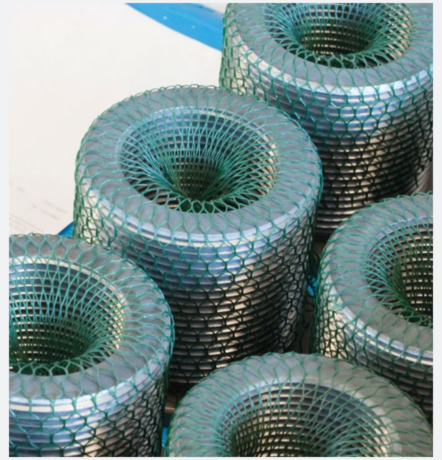
QUALITY CERTIFICATION

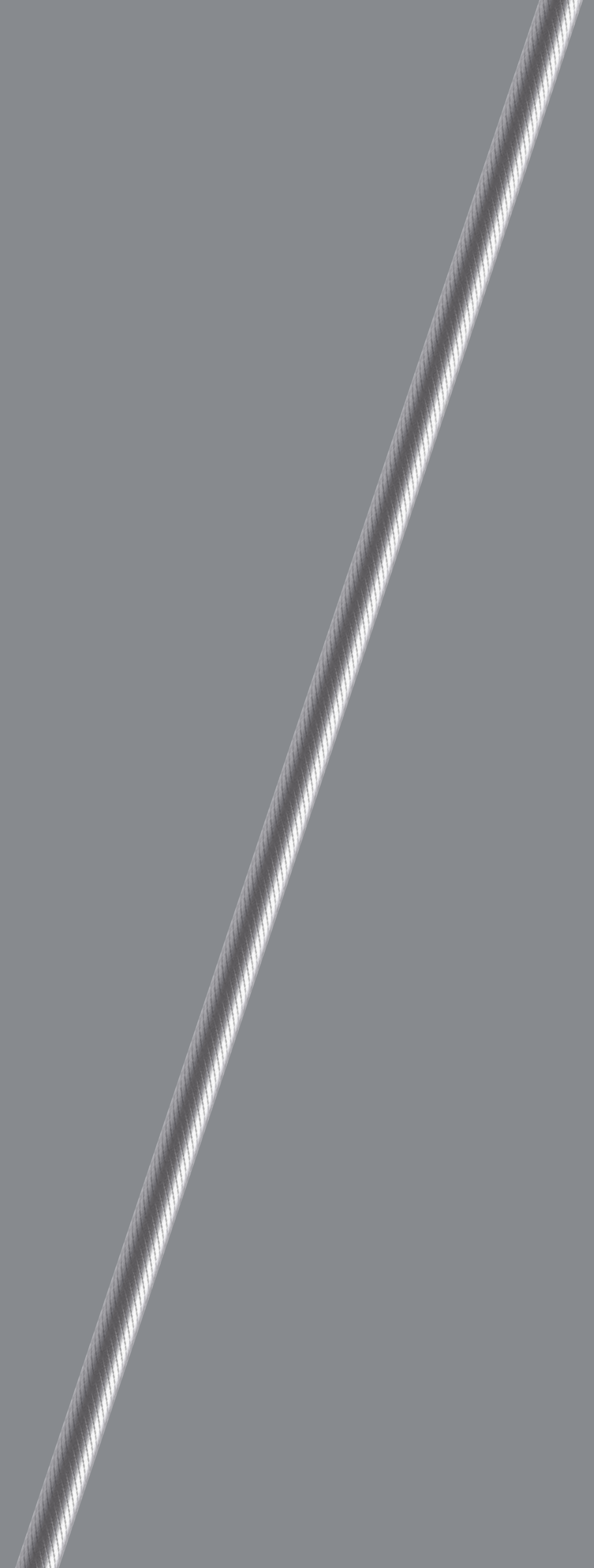
Teufelberger-Redaelli has implemented and operates an audited quality system in accordance with ISO 9001. This certification ensures continued compliance with contractual specifications and all relevant standards for the product. It also enables continuous monitoring and improvement of the effectiveness and the efficiency of the cable production processes and company's organisation. Internal processes and procedures are constantly updated to integrate all technological and organisational actions which aim to reduce and eradicate product non-conformities,waste, delays and remedial works.

Teufelberger-Redaelli's design and production process is monitored and documented throughout each project, assuring full traceability of each component within the cable system. In accordance with ISO standards, external suppliers are constantly evaluated, qualified audited and carefully controlled. Material and product quality is checked at suppliers premises and upon delivery at Teufelberger-Redaelli factories. These controls are executed by trained and qualified Teufelberger-Redaelli personnel, with the support of external and third party inspectors and Certification Bodies. Each step of the production process can be inspected upon request by our Clients or their representative. Cables and material properties are continuously tested in external laboratories with relevant accreditation. For every Teufelberger-Redaelli cable supplied a Quality Certification Book is issued, including all quality certificates to verify each component's material properties and production including NDT tests.

Teufelberger-Redaelli operates an Environmental Management System covering all factories and warehouses which is certified in accordance with ISO 14001.

Redaelli also has certified National and European Technical approvals. The full list of updated certification is available on our website.





HIGH PERFORMANCE STEEL CABLE SYSTEM

TECHNICAL PRODUCT DATA

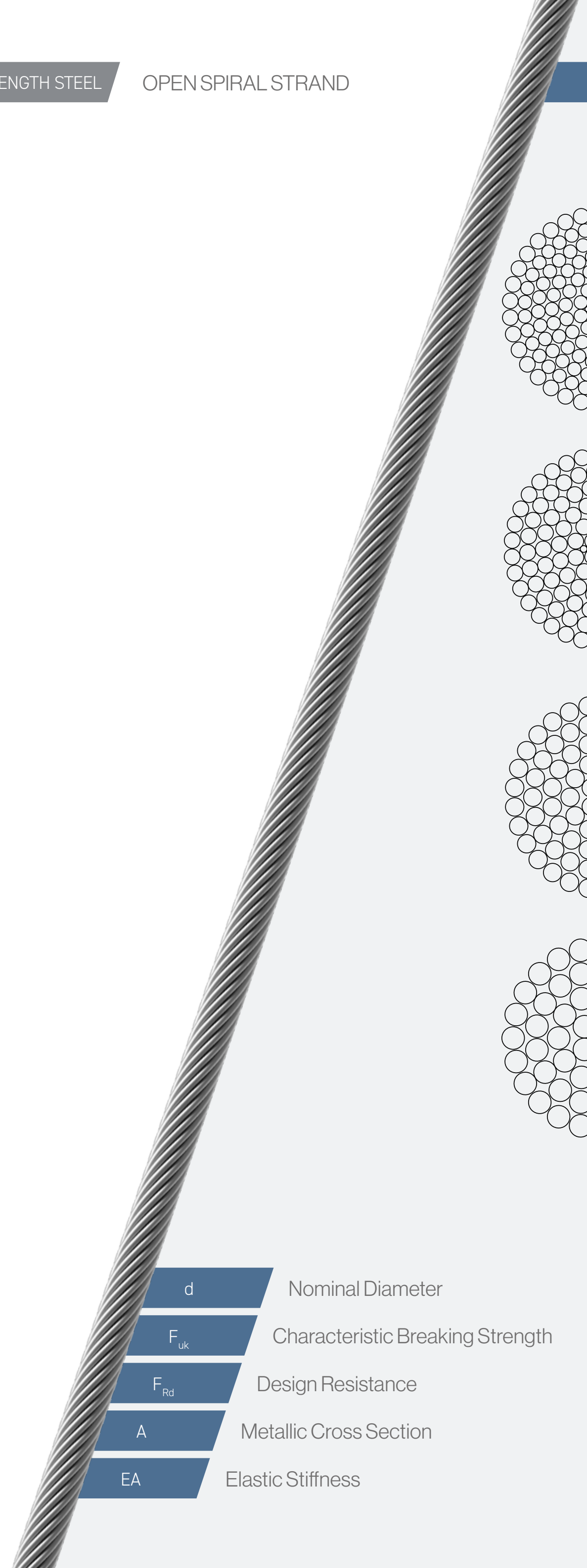
HIGH PERFORMANCE STEEL CABLE SYSTEM

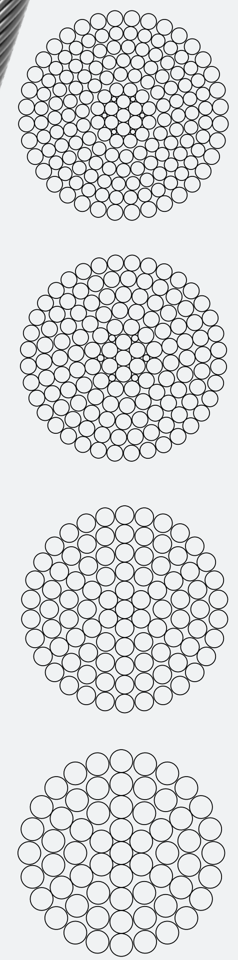
Teufelberger-Redaelli's exacting standards and attention to detail, combined with the highest quality controls and materials, means you can be assured your Teufelberger-Redaelli cable system will perform in your safety critical tensile structure application.

The cable system, prefabricated in the factory using the highest quality cable, sockets, socketing and finishing, will fulfil the design and installation needs of your project. Our range of high performance steel cables can be either supplied using Full Locked Coil (FLC) ropes or Open Spiral Strands (OSS). Both solutions are available with poured spelter cone type sockets (resin or zinc filled) or with pressed swaged sockets depending on the cable diameter and the project requirements and specifications. Each socket is made using high strength steels and can be chosen from a wide range of socket shape options, the majority of which are available in either a fixed or length adjustable configuration to meet the design and architectural requirements. In case of special architectural structural requirements, sockets can be customised in relation to degree of length adjustment, resistance, structural interface.

Teufelberger-Redaelli can draw upon more than 430 years of combined experience in this highly specialised market and is confirmed by succeeding on some of the most challenging civil engineering and construction projects in the world. Teufelberger-Redaelli's specialist Production Dept. and equipment control, pre-stretch and assemble the component parts to supply a high quality prefabricated cable systems ready to be installed on site. No additional manufacturing operations are needed on site.

OSS



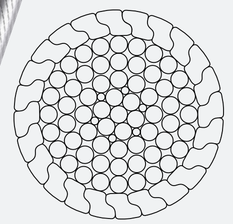


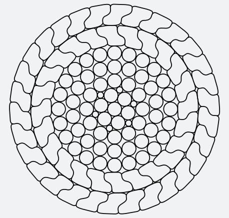
PRODUCT CODE	d (mm)	F_{uk} (1) (kN)	F_{Rd} (2) (kN)	A (mm^2)	EA (MN)	Mass (kg/m)
OSS 8	8	60	40	39	6	0,3
OSS 12	12	135	90	88	15	0,7
OSS 16	16	240	160	157	26	1,3
OSS 20	20	380	253	245	40	2,0
OSS 24	24	545	363	353	58	2,9
OSS 28	28	745	497	480	79	4,0
OSS 32	32	970	647	628	104	5,2
OSS 36	36	1230	820	794	131	6,5
OSS 40	40	1520	1013	981	162	8,1
OSS 44	44	1840	1227	1186	196	9,8
OSS 48	48	2190	1460	1412	233	11,6
OSS 52	52	2570	1713	1657	273	13,7
OSS 56	56	2980	1987	1922	317	15,8
OSS 60	60	3425	2283	2206	364	18,2
OSS 64	64	3870	2580	2510	409	20,7
OSS 68	68	4355	2903	2834	462	23,4
OSS 72	72	4870	3247	3177	518	26,2
OSS 76	76	5410	3607	3540	577	29,2
OSS 80	80	5980	3987	3922	639	32,3
OSS 84	84	6580	4387	4324	705	35,6
OSS 88	88	7210	4807	4746	774	39,1
OSS 92	92	7870	5247	5187	846	42,8
OSS 96	96	8560	5707	5648	921	46,6
OSS 100	100	9275	6183	6128	999	50,5
OSS 104	104	10025	6683	6629	1080	54,6
OSS 108	108	10800	7200	7148	1165	58,9
OSS 112	112	11605	7737	7688	1253	63,4
OSS 116	116	12440	8293	8246	1344	68,0
OSS 120	120	13305	8870	8825	1438	72,7

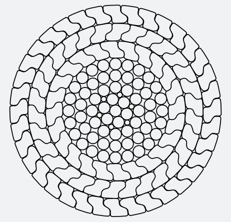
- d — Nominal Diameter
- F_{uk} — Characteristic Breaking Strength
- F_{Rd} — Design Resistance
- A — Metallic Cross Section
- EA — Elastic Stiffness

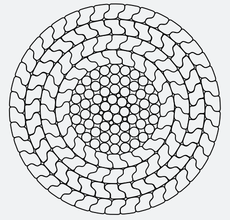
(1) Characteristic Breaking Strength F_{uk} = Minimum Breaking Force F_{min} x Loss Factor ke (ke = 1) where ke = 1 for metal/resin filled socket, ke = 0.9 for swaged socket
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can propose alternative cable diameters and cable characteristics.

FLC







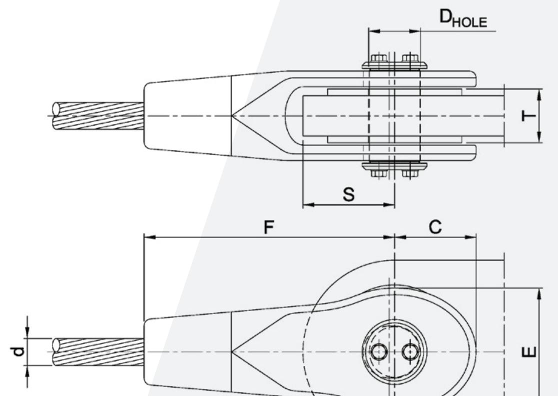


PRODUCT CODE	d (mm)	F_{uk} (1) (kN)	F_{Rd} (2) (kN)	A (mm^2)	EA (MN)	Mass (kg/m)
FLC 16	16	255	170	170	28	1,4
FLC 20	20	395	263	266	44	2,2
FLC 24	24	575	383	383	63	3,2
FLC 28	28	780	520	521	86	4,3
FLC 32	32	1020	680	681	112	5,7
FLC 36	36	1295	863	862	142	7,2
FLC 40	40	1615	1077	1077	178	9,0
FLC 44	44	1955	1303	1303	215	10,8
FLC 48	48	2330	1553	1551	256	12,9
FLC 52	52	2765	1843	1841	304	15,3
FLC 56	56	3205	2137	2136	352	17,8
FLC 60	60	3680	2453	2452	405	20,4
FLC 64	64	4190	2793	2789	460	23,2
FLC 68	68	4730	3153	3149	513	26,2
FLC 72	72	5235	3490	3530	575	29,4
FLC 76	76	5815	3877	3933	641	32,7
FLC 80	80	6425	4283	4358	710	36,3
FLC 84	84	7070	4713	4805	783	40,0
FLC 88	88	7745	5163	5274	860	43,9
FLC 92	92	8450	5633	5764	940	48,0
FLC 96	96	9185	6123	6276	1023	52,2
FLC 100	100	10075	6717	6890	1123	57,3
FLC 104	104	10880	7253	7452	1215	62,0
FLC 108	108	11725	7817	8037	1310	66,9
FLC 112	112	12745	8497	8744	1425	72,8
FLC 116	116	13660	9107	9379	1529	78,0
FLC 120	120	14605	9737	10037	1636	83,5
FLC 124	124	15585	10390	10718	1747	89,2
FLC 128	128	16790	11193	11551	1883	96,1
FLC 132	132	17845	11897	12285	1966	102,2
FLC 136	136	18935	12623	13040	2086	108,5
FLC 140	140	20055	13370	13819	2211	115,0
FLC 144	144	21205	14137	14620	2339	121,7
FLC 148	148	22395	14930	15443	2471	128,5
FLC 152	152	23610	15740	16289	2606	135,5
FLC 156	156	24860	16573	17158	2745	142,8

(1) Characteristic Breaking Strength F_{uk} = Minimum Breaking Force F_{min} x Loss Factor ke (ke = 1) where ke = 1 for metal/resin filled socket, ke = 0.9 for swaged socket
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can propose alternative cable diameters and cable characteristics.

- d — Nominal Diameter
- F_{uk} — Characteristic Breaking Strength
- F_{Rd} — Design Resistance
- A — Metallic Cross Section
- EA — Elastic Stiffness

TTF



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	C (mm)	D_{HOLE} (mm)	E (mm)	F (mm)	S_{max} (mm)	T_{min} (mm)	T_{max} (mm)	Mass (kg)
TTF 12	15	190	127	38	25,5	60	123	50	16	22	1,2
TTF 16	19	320	213	48	32	78	159	60	24	30	2,5
TTF 20	24	490	327	60	39	94	195	75	30	37	4,4
TTF 24	28	700	467	72	46	112	231	85	38	45	7,1
TTF 28	32	970	647	84	54	132	267	100	50	56	11
TTF 32	36	1285	857	95	61	150	303	110	55	60	17
TTF 36	40	1615	1077	104	67	164	334	120	65	70	23
TTF 40	44	1955	1303	120	76	188	375	135	70	75	33
TTF 44	48	2350	1567	130	83	205	406	145	80	85	44
TTF 48	52	2765	1843	140	90	220	442	155	90	95	57
TTF 52	56	3300	2200	154	98	242	478	170	95	105	71
TTF 56	60	3900	2600	172	109	270	519	185	105	110	89
TTF 60	64	4400	2933	182	116	286	560	205	115	120	107
TTF 64	68	5000	3333	196	124	308	596	215	125	130	130
TTF 68	72	5550	3700	208	131	325	637	230	130	135	153
TTF 72	76	6250	4167	218	138	345	673	240	140	145	181
TTF 76	80	7000	4667	232	146	365	708	255	150	155	215
TTF 80	84	7700	5133	245	154	386	750	270	155	165	253
TTF 84	88	8500	5667	256	161	404	781	280	165	170	289
TTF 88	92	9400	6267	282	179	442	827	300	175	180	349
TTF 92	96	10200	6800	293	187	462	868	315	185	190	400
TTF 96	100	11100	7400	305	194	482	899	325	190	200	448
TTF 100	104	12000	8000	320	202	502	945	345	195	205	509
TTF 104	108	13000	8667	332	210	522	976	355	205	215	566
TTF 108	112	14000	9333	345	218	544	1017	370	210	225	632
TTF 112	116	15200	10133	362	227	570	1058	385	215	230	707
TTF 116	120	16150	10767	375	236	592	1094	400	225	240	787
TTF 120	124	17400	11600	388	243	612	1130	410	230	250	872
TTF 124	128	18450	12300	400	252	632	1171	430	240	255	957
TTF 128	132	19800	13200	412	259	650	1207	440	250	265	1055
TTF 132	136	20900	13933	425	267	672	1238	450	255	270	1144
TTF 136	140	22200	14800	438	275	692	1279	465	265	280	1254
TTF 140	144	23500	15667	452	283	715	1315	475	270	290	1364
TTF 144	148	24850	16567	466	292	736	1351	490	280	300	1492
TTF 148	152	26250	17500	479	300	756	1387	500	290	310	1610
TTF 152	156	27700	18467	492	308	776	1423	515	295	320	1741
TTF 156	160	29150	19433	505	316	796	1459	525	300	330	1879

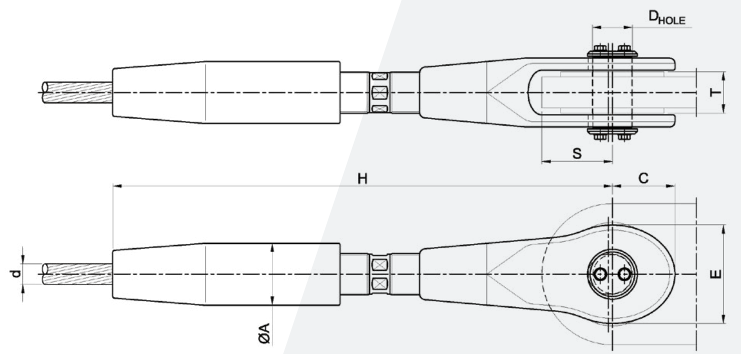
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

- d_{max} — Max Strand Diameter
- N_{uk} — Characteristic Breaking Strength
- N_{Rd} — Design Resistance
- D_{HOLE} — Hole Diameter
- S_{max} — Considering T = T_{max}

ADJUSTABLE FORK SOCKET

TBF

PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	C (mm)	D_{HOLE} (mm)	E (mm)	ØA (mm)	H (mm)	S_{max} (mm)	T_{min} (mm)	T_{max} (mm)	Adj. (mm)	Mass (kg)
TBF 12	15	190	127	38	25,5	60	40	313	50	16	22	± 30	2,3
TBF 16	19	320	213	48	32	78	55	398	60	24	30	± 40	5,3
TBF 20	24	490	327	60	39	94	65	483	75	30	37	± 50	9,2
TBF 24	28	700	467	72	46	112	75	588	85	38	45	± 65	15
TBF 28	32	970	647	84	54	132	90	675	100	50	56	± 75	24
TBF 32	36	1285	857	95	61	150	100	779	110	55	60	± 90	35
TBF 36	40	1615	1077	104	67	164	110	873	120	65	70	± 100	49
TBF 40	44	1955	1303	120	76	188	120	968	135	70	75	± 110	65
TBF 44	48	2350	1567	130	83	205	130	1057	145	80	85	± 120	87
TBF 48	52	2765	1843	140	90	220	145	1152	155	90	95	± 130	117
TBF 52	56	3300	2200	154	98	242	155	1247	170	95	105	± 140	143
TBF 56	60	3900	2600	172	109	270	165	1347	185	105	110	± 150	179
TBF 60	64	4400	2933	182	116	286	180	1432	205	115	120	± 160	221
TBF 64	68	5000	3333	196	124	308	190	1547	215	125	130	± 180	269
TBF 68	72	5550	3700	208	131	325	200	1662	230	130	135	± 200	317
TBF 72	76	6250	4167	218	138	345	210	1752	240	140	145	± 200	370
TBF 76	80	7000	4667	232	146	365	225	1826	255	150	155	± 200	440
TBF 80	84	7700	5133	245	154	386	235	1917	270	155	165	± 200	509
TBF 84	88	8500	5667	256	161	404	245	1992	280	165	170	± 200	584
TBF 88	92	9400	6267	282	179	442	260	2082	300	175	180	± 200	692
TBF 92	96	10200	6800	293	187	462	270	2196	315	185	190	± 200	789
TBF 96	100	11100	7400	305	194	482	280	2266	325	190	200	± 200	877
TBF 100	104	12000	8000	320	202	502	295	2346	345	195	205	± 200	999
TBF 104	108	13000	8667	332	210	522	305	2416	355	205	215	± 200	1104
TBF 108	112	14000	9333	345	218	544	315	2491	370	210	225	± 200	1218
TBF 112	116	15200	10133	362	227	570	325	2561	385	215	230	± 200	1346
TBF 116	120	16150	10767	375	236	592	340	2626	400	225	240	± 200	1499
TBF 120	124	17400	11600	388	243	612	350	2691	410	230	250	± 200	1645
TBF 124	128	18450	12300	400	252	632	360	2786	430	240	255	± 200	1798
TBF 128	132	19800	13200	412	259	650	370	2861	440	250	265	± 210	1968
TBF 132	136	20900	13933	425	267	672	380	2920	450	255	270	± 210	2123
TBF 136	140	22200	14800	438	275	692	390	2988	465	265	280	± 210	2304
TBF 140	144	23500	15667	452	283	715	410	3065	475	270	290	± 210	2545
TBF 144	148	24850	16567	466	292	736	420	3128	490	280	300	± 210	2751
TBF 148	152	26250	17500	479	300	756	430	3181	500	290	310	± 210	2965
TBF 152	156	27700	18467	492	308	776	445	3249	515	295	320	± 210	3225
TBF 156	160	29150	19433	505	316	796	455	3317	525	300	330	± 210	3467



d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
D_{HOLE} Hole Diameter
S_{max} Considering $T = T_{max}$
Adj Adjustment

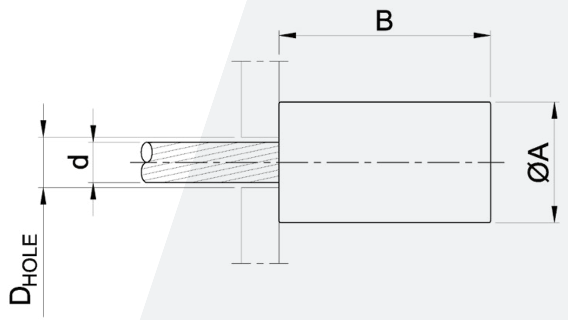
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

FIX CYLINDRICAL SOCKET

CYF

PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	Mass (kg)
CYF 12	15	190	127	40	63	23	0,4
CYF 16	19	320	213	55	84	28	1,0
CYF 20	24	490	327	65	105	35	1,8
CYF 24	28	700	467	75	126	40	2,7
CYF 28	32	970	647	90	147	45	4,8
CYF 32	36	1285	857	100	168	50	6,6
CYF 36	40	1615	1077	110	189	55	8,8
CYF 40	44	1955	1303	120	210	61	12
CYF 44	48	2350	1567	130	231	66	15
CYF 48	52	2765	1843	145	252	71	20
CYF 52	56	3300	2200	155	273	76	25
CYF 56	60	3900	2600	165	294	81	30
CYF 60	64	4400	2933	180	315	87	40
CYF 64	68	5000	3333	190	336	92	47
CYF 68	72	5550	3700	200	357	97	54
CYF 72	76	6250	4167	210	378	102	63
CYF 76	80	7000	4667	225	399	107	77
CYF 80	84	7700	5133	235	420	113	89
CYF 84	88	8500	5667	245	441	118	100
CYF 88	92	9400	6267	260	462	123	120
CYF 92	96	10200	6800	270	483	128	134
CYF 96	100	11100	7400	280	504	133	149
CYF 100	104	12000	8000	295	525	139	176
CYF 104	108	13000	8667	305	546	144	194
CYF 108	112	14000	9333	315	567	149	214
CYF 112	116	15200	10133	325	588	154	234
CYF 116	120	16150	10767	340	609	159	269
CYF 120	124	17400	11600	350	630	165	294
CYF 124	128	18450	12300	360	651	170	320
CYF 128	132	19800	13200	370	672	175	347
CYF 132	136	20900	13933	380	693	180	375
CYF 136	140	22200	14800	390	714	185	405
CYF 140	144	23500	15667	410	735	191	475
CYF 144	148	24850	16567	420	756	196	510
CYF 148	152	26250	17500	430	777	201	546
CYF 152	156	27700	18467	445	798	206	606
CYF 156	160	29150	19433	455	819	211	647



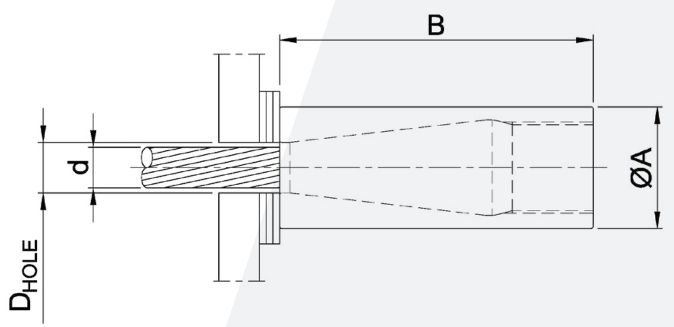
d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
D_{HOLE} Hole Diameter

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE CYLINDRICAL SOCKET WITH SHIMS

CYS



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	Mass (kg)
CYS 12	15	190	127	40	100	23	0,6
CYS 16	19	320	213	55	130	28	1,5
CYS 20	24	490	327	65	160	35	2,5
CYS 24	28	700	467	75	190	40	3,7
CYS 28	32	970	647	90	220	45	6,6
CYS 32	36	1285	857	100	250	50	9,0
CYS 36	40	1615	1077	110	285	55	12
CYS 40	44	1955	1303	120	315	61	16
CYS 44	48	2350	1567	130	345	66	19
CYS 48	52	2765	1843	145	375	71	27
CYS 52	56	3300	2200	155	405	76	34
CYS 56	60	3900	2600	165	435	81	40
CYS 60	64	4400	2933	180	465	87	53
CYS 64	68	5000	3333	190	495	92	61
CYS 68	72	5550	3700	200	525	97	72
CYS 72	76	6250	4167	210	555	102	82
CYS 76	80	7000	4667	225	585	107	102
CYS 80	84	7700	5133	235	615	113	116
CYS 84	88	8500	5667	245	645	118	132
CYS 88	92	9400	6267	260	675	123	158
CYS 92	96	10200	6800	270	705	128	176
CYS 96	100	11100	7400	280	735	133	194
CYS 100	104	12000	8000	295	765	139	232
CYS 104	108	13000	8667	305	795	144	255
CYS 108	112	14000	9333	315	825	149	279
CYS 112	116	15200	10133	325	855	154	304
CYS 116	120	16150	10767	340	885	159	349
CYS 120	124	17400	11600	350	915	165	384
CYS 124	128	18450	12300	360	945	170	416
CYS 128	132	19800	13200	370	975	175	449
CYS 132	136	20900	13933	380	1005	180	483
CYS 136	140	22200	14800	390	1035	185	525
CYS 140	144	23500	15667	410	1065	191	619
CYS 144	148	24850	16567	420	1095	196	662
CYS 148	152	26250	17500	430	1125	201	713
CYS 152	156	27700	18467	445	1155	206	791
CYS 156	160	29150	19433	455	1185	211	842

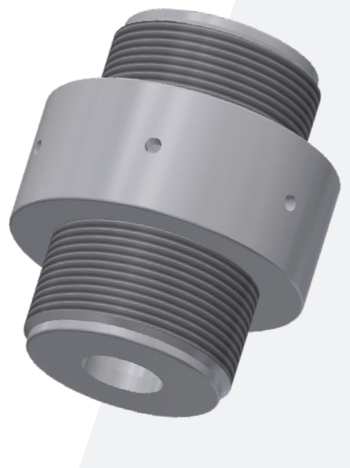
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

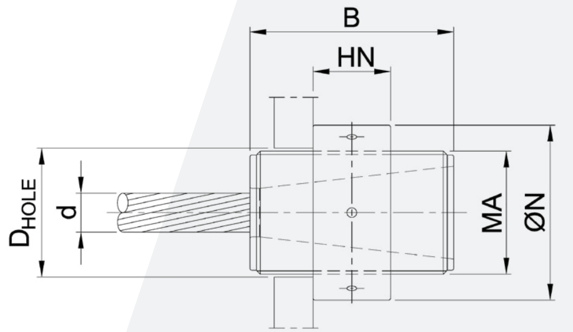
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

- d_{max} — Max Strand Diameter
- N_{uk} — Characteristic Breaking Strength
- N_{Rd} — Design Resistance
- D_{HOLE} — Hole Diameter

ADJUSTABLE CYLINDRICAL SOCKET ANCHORED BY NUT

CYT





PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	MA (mm)	B (mm)	D_{HOLE} (mm)	ØN (mm)	HN (mm)	Adj. (mm)	Mass (kg)
CYT 12	15	190	127	45	63	48	65	25	± 16	0,8
CYT 16	19	320	213	55	84	59	80	35	± 22	1,5
CYT 20	24	490	327	70	105	75	100	40	± 30	3,2
CYT 24	28	700	467	80	126	85	115	50	± 35	5,1
CYT 28	32	970	647	90	147	95	130	60	± 41	7,5
CYT 32	36	1285	857	105	168	110	150	65	± 49	12
CYT 36	40	1615	1077	115	189	120	165	75	± 53	15
CYT 40	44	1955	1303	130	210	135	185	80	± 61	22
CYT 44	48	2350	1567	140	231	145	200	90	± 67	28
CYT 48	52	2765	1843	150	252	155	210	100	± 72	34
CYT 52	56	3300	2200	165	273	170	235	105	± 80	46
CYT 56	60	3900	2600	175	294	180	245	115	± 86	54
CYT 60	64	4400	2933	190	315	195	270	120	± 92	69
CYT 64	68	5000	3333	200	336	208	280	130	± 97	80
CYT 68	72	5550	3700	210	357	218	295	140	± 103	94
CYT 72	76	6250	4167	225	378	233	315	145	± 111	114
CYT 76	80	7000	4667	235	399	245	330	155	± 114	130
CYT 80	84	7700	5133	250	420	260	350	160	± 122	156
CYT 84	88	8500	5667	260	441	270	365	170	± 128	178
CYT 88	92	9400	6267	270	462	280	380	180	± 133	202
CYT 92	96	10200	6800	285	483	297	400	185	± 139	232
CYT 96	100	11100	7400	295	504	307	420	195	± 145	265
CYT 100	104	12000	8000	310	525	322	435	200	± 153	300
CYT 104	108	13000	8667	320	546	332	450	210	± 158	334
CYT 108	112	14000	9333	335	567	347	470	220	± 162	378
CYT 112	116	15200	10133	350	588	365	490	225	± 170	427
CYT 116	120	16150	10767	360	609	375	510	235	± 175	477
CYT 120	124	17400	11600	370	630	385	520	240	± 183	512
CYT 124	128	18450	12300	385	651	405	540	250	± 189	570
CYT 128	132	19800	13200	395	672	415	560	260	± 194	630
CYT 132	136	20900	13933	410	693	430	580	265	± 202	699
CYT 136	140	22200	14800	420	714	440	590	275	± 208	741
CYT 140	144	23500	15667	435	735	460	610	280	± 216	821
CYT 144	148	24850	16567	445	756	470	630	290	± 221	897
CYT 148	152	26250	17500	455	777	480	640	300	± 227	955
CYT 152	156	27700	18467	470	798	500	660	305	± 235	1046
CYT 156	160	29150	19433	485	819	515	680	315	± 240	1149

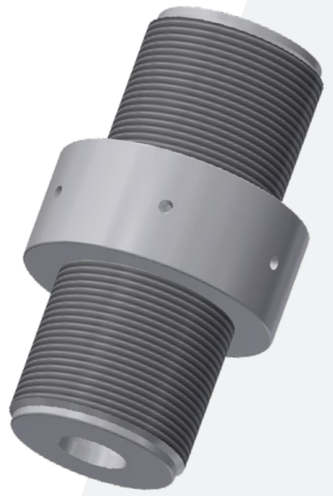
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

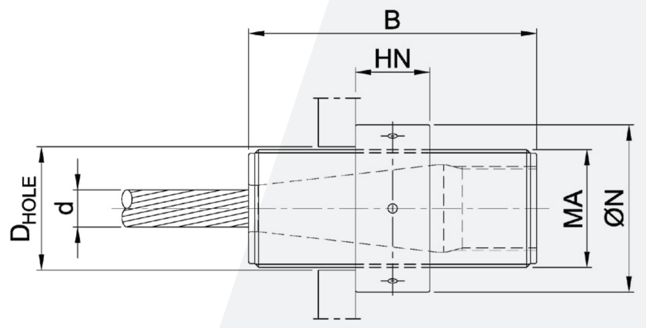
- d_{max} — Max Strand Diameter
- N_{uk} — Characteristic Breaking Strength
- N_{Rd} — Design Resistance
- D_{HOLE} — Hole Diameter
- Adj. — Adjustment

ADJUSTABLE CYLINDRICAL SOCKET WITH FLAT NUT

CYN



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	MA (mm)	B (mm)	D_{HOLE} (mm)	ØN (mm)	HN (mm)	Adj. (mm)	Mass (kg)
CYN 12	15	190	127	45	100	48	65	25	± 35	1,0
CYN 16	19	320	213	55	130	59	80	35	± 45	1,9
CYN 20	24	490	327	70	160	75	100	40	± 57	4,0
CYN 24	28	700	467	80	190	85	115	50	± 67	6,1
CYN 28	32	970	647	90	220	95	130	60	± 77	9,0
CYN 32	36	1285	857	105	250	110	150	65	± 90	14
CYN 36	40	1615	1077	115	285	120	165	75	± 101	19
CYN 40	44	1955	1303	130	315	135	185	80	± 114	27
CYN 44	48	2350	1567	140	345	145	200	90	± 124	34
CYN 48	52	2765	1843	150	375	155	210	100	± 134	41
CYN 52	56	3300	2200	165	405	170	235	105	± 146	56
CYN 56	60	3900	2600	175	435	180	245	115	± 156	65
CYN 60	64	4400	2933	190	465	195	270	120	± 167	83
CYN 64	68	5000	3333	200	495	208	280	130	± 177	96
CYN 68	72	5550	3700	210	525	218	295	140	± 187	113
CYN 72	76	6250	4167	225	555	233	315	145	± 199	138
CYN 76	80	7000	4667	235	585	245	330	155	± 207	155
CYN 80	84	7700	5133	250	615	260	350	160	± 220	187
CYN 84	88	8500	5667	260	645	270	365	170	± 230	214
CYN 88	92	9400	6267	270	675	280	380	180	± 240	241
CYN 92	96	10200	6800	285	705	297	400	185	± 250	277
CYN 96	100	11100	7400	295	735	307	420	195	± 260	314
CYN 100	104	12000	8000	310	765	322	435	200	± 273	361
CYN 104	108	13000	8667	320	795	332	450	210	± 283	399
CYN 108	112	14000	9333	335	825	347	470	220	± 291	450
CYN 112	116	15200	10133	350	855	365	490	225	± 303	510
CYN 116	120	16150	10767	360	885	375	510	235	± 313	565
CYN 120	124	17400	11600	370	915	385	520	240	± 326	611
CYN 124	128	18450	12300	385	945	405	540	250	± 336	678
CYN 128	132	19800	13200	395	975	415	560	260	± 346	745
CYN 132	136	20900	13933	410	1005	430	580	265	± 358	829
CYN 136	140	22200	14800	420	1035	440	590	275	± 368	882
CYN 140	144	23500	15667	435	1065	460	610	280	± 381	978
CYN 144	148	24850	16567	445	1095	470	630	290	± 391	1063
CYN 148	152	26250	17500	455	1126	480	640	300	± 401	1130
CYN 152	156	27700	18467	470	1154	500	660	305	± 413	1246
CYN 156	160	29150	19433	485	1183	515	680	315	± 422	1370



- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- D_{HOLE} Hole Diameter
- Adj. Adjustment

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

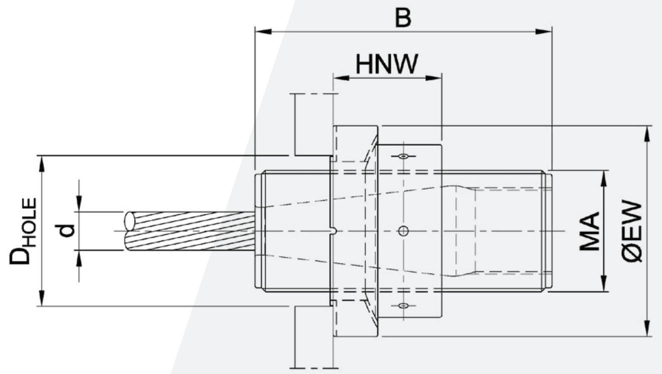
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

ADJUSTABLE CYLINDRICAL SOCKET WITH SPHERICAL NUT AND WASHER

CYW

PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	MA (mm)	B (mm)	D_{HOLE} (mm)	HNW (mm)	ØEW (mm)	Adj. (mm)	Mass (kg)
CYW 12	15	190	127	45	100	57	36	80	± 34	1,5
CYW 16	19	320	213	55	130	68	47	100	± 44	2,7
CYW 20	24	490	327	70	160	86	59	120	± 56	5,3
CYW 24	28	700	467	80	190	99	72	140	± 66	8,4
CYW 28	32	970	647	90	220	111	86	160	± 75	12
CYW 32	36	1285	857	105	250	130	95	180	± 88	19
CYW 36	40	1615	1077	115	285	143	107	200	± 99	25
CYW 40	44	1955	1303	130	315	161	116	230	± 111	37
CYW 44	48	2350	1567	140	345	174	125	240	± 121	44
CYW 48	52	2765	1843	150	375	186	140	260	± 131	54
CYW 52	56	3300	2200	165	405	205	147	290	± 143	74
CYW 56	60	3900	2600	175	435	217	163	300	± 153	85
CYW 60	64	4400	2933	190	465	236	170	330	± 163	110
CYW 64	68	5000	3333	200	495	248	181	340	± 173	123
CYW 68	72	5550	3700	210	525	261	195	360	± 183	147
CYW 72	76	6250	4167	225	555	279	203	380	± 195	177
CYW 76	80	7000	4667	235	585	292	222	400	± 203	204
CYW 80	84	7700	5133	250	615	310	226	410	± 215	235
CYW 84	88	8500	5667	260	645	323	235	420	± 225	263
CYW 88	92	9400	6267	270	675	336	254	440	± 235	301
CYW 92	96	10200	6800	285	705	354	268	460	± 245	348
CYW 96	100	11100	7400	295	735	367	275	490	± 255	400
CYW 100	104	12000	8000	310	765	385	290	510	± 267	460
CYW 104	108	13000	8667	320	795	398	299	520	± 277	500
CYW 108	112	14000	9333	335	825	415	318	550	± 285	574
CYW 112	116	15200	10133	350	855	434	322	570	± 297	643
CYW 116	120	16150	10767	360	885	446	329	580	± 307	709
CYW 120	124	17400	11600	370	915	460	334	590	± 319	738
CYW 124	128	18450	12300	385	945	477	353	600	± 329	822
CYW 128	132	19800	13200	395	975	490	361	620	± 339	901
CYW 132	136	20900	13933	410	1005	508	365	640	± 351	994
CYW 136	140	22200	14800	420	1035	521	395	650	± 361	1071
CYW 140	144	23500	15667	435	1065	539	398	680	± 373	1191
CYW 144	148	24850	16567	445	1095	552	406	700	± 383	1292
CYW 148	152	26250	17500	455	1126	565	421	710	± 393	1369
CYW 152	156	27700	18467	470	1154	583	425	730	± 405	1495
CYW 156	160	29150	19433	485	1183	601	439	750	± 414	1639



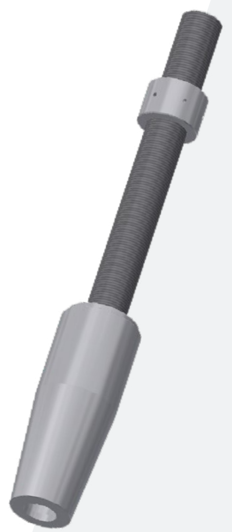
- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- D_{HOLE} Hole Diameter
- Adj. Adjustment

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

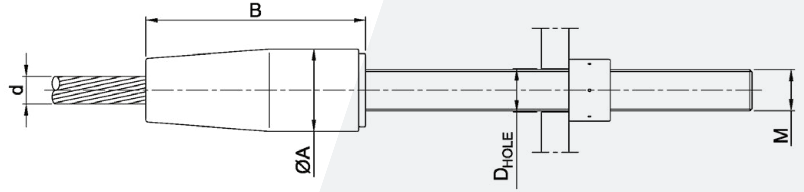
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE CYLINDRICAL SOCKET WITH THREADED ROD AND BUSH

CYB



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	M (mm)	Mass (kg)
CYB 12	15	160	107	40	107	21,5	20 x 2.5	0,5
CYB 16	19	280	187	55	140	26	24 x 3	1,4
CYB 20	24	440	293	65	170	32	30 x 3	2,4
CYB 24	28	620	413	75	200	38	36 x 3	3,7
CYB 28	32	850	567	90	230	45	42 x 3	6,2
CYB 32	36	1150	767	100	260	51	48 x 3	8,5
CYB 36	40	1400	933	110	295	55	52 x 3	12
CYB 40	44	1750	1167	120	325	63	60 x 4	15
CYB 44	48	2100	1400	130	360	67	64 x 4	20
CYB 48	52	2500	1667	145	390	75	72 x 4	27
CYB 52	56	2950	1967	155	420	84	80 x 6	32
CYB 56	60	3400	2267	165	450	89	85 x 6	39
CYB 60	64	3900	2600	180	480	94	90 x 6	51
CYB 64	68	4500	3000	190	510	99	95 x 6	60
CYB 68	72	5000	3333	200	540	109	105 x 6	69
CYB 72	76	5600	3733	210	575	114	110 x 6	80
CYB 76	80	6300	4200	225	605	124	120 x 6	97
CYB 80	84	7000	4667	235	635	130	125 x 6	111
CYB 84	88	7700	5133	245	665	135	130 x 6	126
CYB 88	92	8500	5667	260	695	140	135 x 6	150
CYB 92	96	9300	6200	270	725	145	140 x 6	168
CYB 96	100	10100	6733	280	755	150	145 x 6	188
CYB 100	104	10900	7267	295	785	160	155 x 6	218
CYB 104	108	11800	7867	305	815	165	160 x 6	242
CYB 108	112	12700	8467	315	845	170	165 x 8	267
CYB 112	116	13900	9267	325	875	180	175 x 8	291
CYB 116	120	14900	9933	340	905	185	180 x 8	331
CYB 120	124	15900	10600	350	935	190	185 x 8	364
CYB 124	128	17000	11333	360	965	195	190 x 8	397
CYB 128	132	18100	12067	370	995	215	210 x 8	422
CYB 132	136	19200	12800	380	1025	225	220 x 10	454
CYB 136	140	20400	13600	390	1055	235	230 x 10	488
CYB 140	144	21600	14400	410	1085	235	230 x 10	571
CYB 144	148	22900	15267	420	1115	245	240 x 10	612
CYB 148	152	24300	16200	425	1140	250	245 x 10	633
CYB 152	156	25600	17067	435	1170	255	250 x 10	679
CYB 156	160	26900	17933	445	1200	260	255 x 10	728



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Mass Mass Without Threaded Rod

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

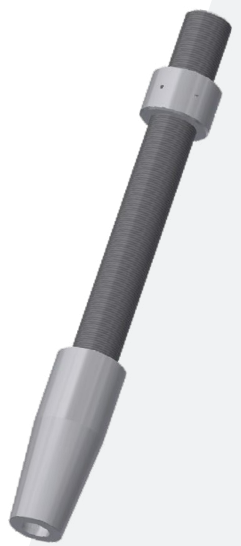
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

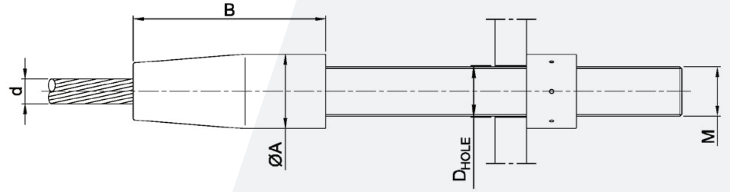
HIGH STRENGTH STEEL

ADJUSTABLE CYLINDRICAL SOCKET WITH THREADED ROD

CYM



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	M (mm)	Mass (kg)
CYM 12	15	190	127	40	99	29	27 x 3	0,4
CYM 16	19	320	213	55	132	38	36 x 3	1,2
CYM 20	24	490	327	65	168	45	42 x 3	2,2
CYM 24	28	700	467	75	201	59	50 x 3	3,5
CYM 28	32	970	647	90	229	59	56 x 4	5,6
CYM 32	36	1285	857	100	264	67	64 x 4	7,9
CYM 36	40	1615	1077	110	302	75	72 x 4	11
CYM 40	44	1955	1303	120	340	84	80 x 4	14
CYM 44	48	2350	1567	130	378	94	90 x 6	18
CYM 48	52	2765	1843	145	411	104	100 x 6	25
CYM 52	56	3300	2200	155	444	109	105 x 6	31
CYM 56	60	3900	2600	165	482	119	115 x 6	37
CYM 60	64	4400	2933	180	515	124	120 x 6	50
CYM 64	68	5000	3333	190	548	135	130 x 6	58
CYM 68	72	5550	3700	200	576	140	135 x 6	68
CYM 72	76	6250	4167	210	614	145	140 x 6	80
CYM 76	80	7000	4667	225	647	155	150 x 6	97
CYM 80	84	7700	5133	235	680	165	160 x 6	110
CYM 84	88	8500	5667	245	733	170	165 x 6	130
CYM 88	92	9400	6267	260	766	180	175 x 6	154
CYM 92	96	10200	6800	270	799	190	185 x 8	170
CYM 96	100	11100	7400	280	832	195	190 x 8	192
CYM 100	104	12000	8000	295	865	205	200 x 8	223
CYM 104	108	13000	8667	305	898	210	205 x 8	249
CYM 108	112	14000	9333	315	931	215	210 x 8	276
CYM 112	116	15200	10133	325	964	225	220 x 8	300
CYM 116	120	16150	10767	340	997	235	230 x 8	341
CYM 120	124	17400	11600	350	1030	245	240 x 8	370
CYM 124	128	18450	12300	360	1063	250	245 x 8	406
CYM 128	132	19800	13200	370	1096	261	255 x 8	438
CYM 132	136	20900	13933	380	1129	266	260 x 8	477
CYM 136	140	22200	14800	390	1162	276	270 x 8	511
CYM 140	144	23500	15667	410	1200	286	280 x 10	596
CYM 144	148	24850	16567	420	1233	291	285 x 10	645
CYM 148	152	26250	17500	430	1266	297	290 x 10	695
CYM 152	156	27700	18467	445	1299	307	300 x 10	766
CYM 156	160	29150	19433	455	1332	317	310 x10	813



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Mass Mass Without Threaded Rod

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

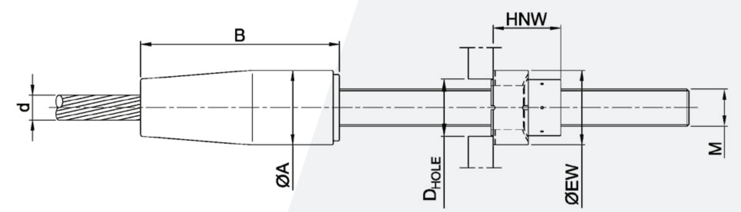
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

ADJUSTABLE CYLINDRICAL SOCKET WITH THREADED ROD, BUSH, SPHERICAL NUT AND WASHER

CYR



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	ØEW (mm)	HNW (mm)	M (mm)	Mass (kg)
CYR 12	15	160	107	40	107	31	40	39	20 x 2.5	0,7
CYR 16	19	280	187	55	140	38	50	48	24 x 3	1,7
CYR 20	24	440	293	65	170	46	60	53	30 x 3	2,8
CYR 24	28	620	413	75	200	55	80	63	36 x 3	4,6
CYR 28	32	850	567	90	230	65	90	78	42 x 3	7,6
CYR 32	36	1150	767	100	260	74	100	88	48 x 3	10
CYR 36	40	1400	933	110	295	81	110	95	52 x 3	14
CYR 40	44	1750	1167	120	325	92	120	108	60 x 4	18
CYR 44	48	2100	1400	130	360	99	130	117	64 x 4	24
CYR 48	52	2500	1667	145	390	111	150	128	72 x 4	33
CYR 52	56	2950	1967	155	420	122	170	141	80 x 6	41
CYR 56	60	3400	2267	165	450	130	170	156	85 x 6	48
CYR 60	64	3900	2600	180	480	138	180	163	90 x 6	62
CYR 64	68	4500	3000	190	510	146	190	177	95 x 6	73
CYR 68	72	5000	3333	200	540	160	210	186	105 x 6	86
CYR 72	76	5600	3733	210	575	168	220	202	110 x 6	101
CYR 76	80	6300	4200	225	605	181	240	210	120 x 6	121
CYR 80	84	7000	4667	235	635	189	250	224	125 x 6	140
CYR 84	88	7700	5133	245	665	197	260	229	130 x 6	158
CYR 88	92	8500	5667	260	695	206	270	242	135 x 6	187
CYR 92	96	9300	6200	270	725	213	280	247	140 x 6	208
CYR 96	100	10100	6733	280	755	222	290	261	145 x 6	234
CYR 100	104	10900	7267	295	785	235	310	270	155 x 6	271
CYR 104	108	11800	7867	305	815	243	320	285	160 x 6	302
CYR 108	112	12700	8467	315	845	251	330	298	165 x 8	335
CYR 112	116	13900	9267	325	875	265	350	307	175 x 8	368
CYR 116	120	14900	9933	340	905	273	360	323	180 x 8	418
CYR 120	124	15900	10600	350	935	281	370	327	185 x 8	456
CYR 124	128	17000	11333	360	965	289	380	342	190 x 8	500
CYR 128	132	18100	12067	370	995	314	410	358	210 x 8	539
CYR 132	136	19200	12800	380	1025	327	430	367	220 x 10	583
CYR 136	140	20400	13600	390	1055	340	450	376	230 x 10	630
CYR 140	144	21600	14400	410	1085	343	450	386	230 x 10	722
CYR 144	148	22900	15267	420	1115	356	470	395	240 x 10	776
CYR 148	152	24300	16200	425	1140	364	480	409	245 x 10	814
CYR 152	156	25600	17067	435	1170	372	490	414	250 x 10	867
CYR 156	160	26900	17933	445	1200	380	500	429	255 x 10	934

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Mass Mass Without Threaded Rod

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

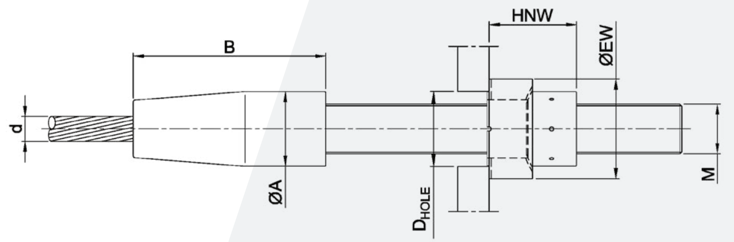
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

ADJUSTABLE CYLINDRICAL SOCKET WITH THREADED ROD, SPHERICAL NUT AND WASHER

CYV



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	ØEW (mm)	HNW (mm)	M (mm)	Mass (kg)
CYV 12	15	190	127	40	99	38	60	45	27 x 3	0,8
CYV 16	19	320	213	55	132	51	80	58	36 x 3	2,0
CYV 20	24	490	327	65	168	60	90	63	42 x 3	3,1
CYV 24	28	700	467	75	201	78	120	81	50 x 3	5,5
CYV 28	32	970	647	90	229	80	120	91	56 x 4	8,3
CYV 32	36	1285	857	100	264	92	130	104	64 x 4	11
CYV 36	40	1615	1077	110	302	103	140	113	72 x 4	15
CYV 40	44	1955	1303	120	340	114	150	126	80 x 4	19
CYV 44	48	2350	1567	130	378	128	190	138	90 x 6	27
CYV 48	52	2765	1843	145	411	141	210	152	100 x 6	37
CYV 52	56	3300	2200	155	444	150	230	161	105 x 6	48
CYV 56	60	3900	2600	165	482	163	250	180	115 x 6	59
CYV 60	64	4400	2933	180	515	171	240	190	120 x 6	70
CYV 64	68	5000	3333	190	548	185	260	209	130 x 6	84
CYV 68	72	5550	3700	200	576	193	270	212	135 x 6	96
CYV 72	76	6250	4167	210	614	201	280	227	140 x 6	114
CYV 76	80	7000	4667	225	647	214	300	236	150 x 6	136
CYV 80	84	7700	5133	235	680	229	320	255	160 x 6	158
CYV 84	88	8500	5667	245	733	236	330	258	165 x 6	182
CYV 88	92	9400	6267	260	766	250	350	277	175 x 6	217
CYV 92	96	10200	6800	270	799	263	370	287	185 x 8	241
CYV 96	100	11100	7400	280	832	272	380	302	190 x 8	272
CYV 100	104	12000	8000	295	865	285	390	310	200 x 8	306
CYV 104	108	13000	8667	305	898	293	410	323	205 x 8	349
CYV 108	112	14000	9333	315	931	302	410	338	210 x 8	381
CYV 112	116	15200	10133	325	964	315	430	347	220 x 8	416
CYV 116	120	16150	10767	340	997	329	450	366	230 x 8	475
CYV 120	124	17400	11600	350	1030	342	470	375	240 x 8	517
CYV 124	128	18450	12300	360	1063	350	490	389	245 x 8	580
CYV 128	132	19800	13200	370	1096	363	510	399	255 x 8	626
CYV 132	136	20900	13933	380	1129	371	510	404	260 x 8	661
CYV 136	140	22200	14800	390	1162	384	530	411	270 x 8	711
CYV 140	144	23500	15667	410	1200	398	550	430	280 x 10	823
CYV 144	148	24850	16567	420	1233	406	560	434	285 x 10	881
CYV 148	152	26250	17500	430	1266	414	570	449	290 x 10	953
CYV 152	156	27700	18467	445	1299	427	590	458	300 x 10	1042
CYV 156	160	29150	19433	455	1332	441	610	477	310 x10	1123

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Mass Mass Without Threaded Rod

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

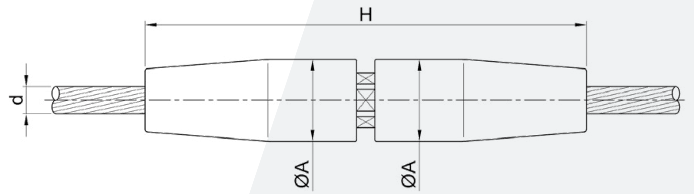
CYLINDRICAL SOCKET WITH COUPLER

CYC

PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	H (mm)	Mass (kg)
CYC 12	15	190	127	40	216	1,2
CYC 16	19	320	213	55	284	3,1
CYC 20	24	490	327	65	350	5,4
CYC 24	28	700	467	75	421	8,9
CYC 28	32	970	647	90	482	14
CYC 32	36	1285	857	100	554	20
CYC 36	40	1615	1077	110	634	27
CYC 40	44	1955	1303	120	685	36
CYC 44	48	2350	1567	130	786	47
CYC 48	52	2765	1843	145	852	66
CYC 52	56	3300	2200	155	918	81
CYC 56	60	3900	2600	165	1004	100
CYC 60	64	4400	2933	180	1070	128
CYC 64	68	5000	3333	190	1136	151
CYC 68	72	5550	3700	200	1202	176
CYC 72	76	6250	4167	210	1288	208
CYC 76	80	7000	4667	225	1354	252
CYC 80	84	7700	5133	235	1430	290
CYC 84	88	8500	5667	245	1536	344
CYC 88	92	9400	6267	260	1612	407
CYC 92	96	10200	6800	270	1698	459
CYC 96	100	11100	7400	280	1764	512
CYC 100	104	12000	8000	295	1830	593
CYC 104	108	13000	8667	305	1896	657
CYC 108	112	14000	9333	315	1962	724
CYC 112	116	15200	10133	325	2028	794
CYC 116	120	16150	10767	340	2094	899
CYC 120	124	17400	11600	350	2160	984
CYC 124	128	18450	12300	360	2246	1080
CYC 128	132	19800	13200	370	2312	1172
CYC 132	136	20900	13933	380	2378	1270
CYC 136	140	22200	14800	390	2444	1372
CYC 140	144	23500	15667	410	2525	1577
CYC 144	148	24850	16567	420	2591	1699
CYC 148	152	26250	17500	430	2657	1824
CYC 152	156	27700	18467	445	2723	2004
CYC 156	160	29150	19433	455	2789	2142

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

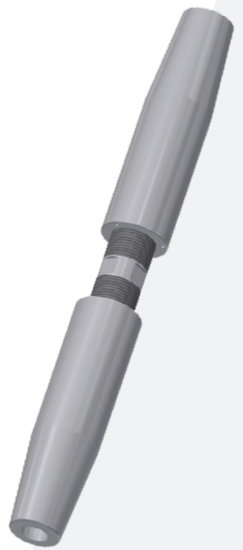


- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- D_{HOLE} Hole Diameter

HIGH STRENGTH STEEL

ADJUSTABLE CYLINDRICAL SOCKET WITH COUPLER

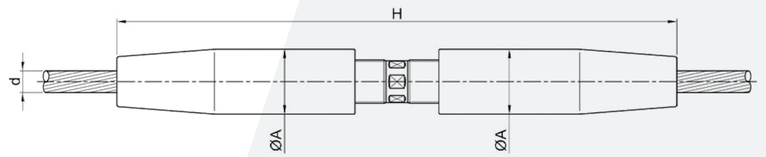
CYA



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	H (mm)	Adj. (mm)	Mass (kg)
CYA 12	15	190	127	40	326	± 30	2
CYA 16	19	320	213	55	412	± 40	5
CYA 20	24	490	327	65	506	± 50	8
CYA 24	28	700	467	75	624	± 65	14
CYA 28	32	970	647	90	709	± 75	21
CYA 32	36	1285	857	100	828	± 90	30
CYA 36	40	1615	1077	110	940	± 100	41
CYA 40	44	1955	1303	120	1003	± 110	53
CYA 44	48	2350	1567	130	1140	± 120	68
CYA 48	52	2765	1843	145	1248	± 130	97
CYA 52	56	3300	2200	155	1356	± 140	117
CYA 56	60	3900	2600	165	1454	± 150	143
CYA 60	64	4400	2933	180	1532	± 160	184
CYA 64	68	5000	3333	190	1670	± 180	223
CYA 68	72	5550	3700	200	1788	± 200	264
CYA 72	76	6250	4167	210	1886	± 200	304
CYA 76	80	7000	4667	225	1964	± 200	366
CYA 80	84	7700	5133	235	2052	± 200	415
CYA 84	88	8500	5667	245	2140	± 200	477
CYA 88	92	9400	6267	260	2218	± 200	558
CYA 92	96	10200	6800	270	2340	± 200	629
CYA 96	100	11100	7400	280	2418	± 200	698
CYA 100	104	12000	8000	295	2486	± 200	802
CYA 104	108	13000	8667	305	2564	± 200	885
CYA 108	112	14000	9333	315	2632	± 200	967
CYA 112	116	15200	10133	325	2690	± 200	1051
CYA 116	120	16150	10767	340	2748	± 200	1178
CYA 120	124	17400	11600	350	2806	± 200	1277
CYA 124	128	18450	12300	360	2894	± 200	1391
CYA 128	132	19800	13200	370	2962	± 210	1504
CYA 132	136	20900	13933	380	3018	± 210	1613
CYA 136	140	22200	14800	390	3072	± 210	1730
CYA 140	144	23500	15667	410	3145	± 210	1953
CYA 144	148	24850	16567	420	3199	± 210	2085
CYA 148	152	26250	17500	430	3233	± 210	2243
CYA 152	156	27700	18467	445	3297	± 210	2468
CYA 156	160	29150	19433	455	3361	± 210	2643

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

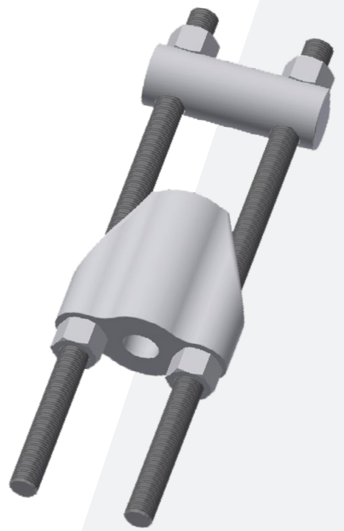
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

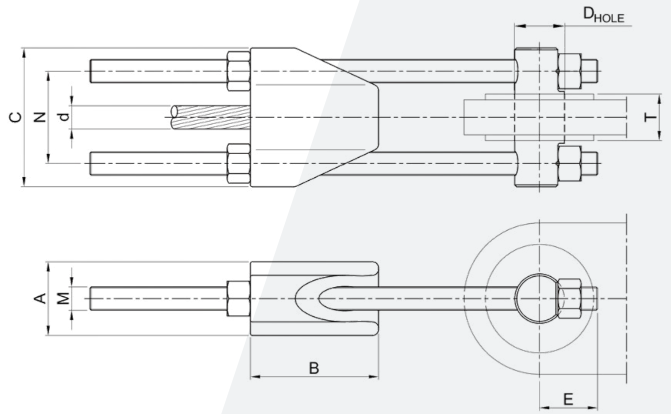


- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- D_{HOLE} Hole Diameter
- Adj. Adjustment

ADJUSTABLE BRIDGE SOCKET

BRC





PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	A (mm)	B (mm)	C (mm)	D_{HOLE} (mm)	E (mm)	M (mm)	N (mm)	T_{min} (mm)	T_{max} (mm)	Adj. (mm)	Mass (kg)
BRC 12	15	160	107	40	66	80	32	37	16 x 2	56	16	22	± 150	3,5
BRC 16	19	280	187	55	88	104	38	45	20 x 3	72	24	30	± 150	7,0
BRC 20	24	440	293	65	110	126	47	55	24 x 3	86	30	37	± 150	11
BRC 24	28	620	413	80	132	150	56	65	27 x 3	102	38	45	± 150	18
BRC 28	32	850	567	90	154	174	66	78	33 x 4	118	50	56	± 150	27
BRC 32	36	1150	767	105	176	198	72	85	36 x 3	134	55	60	± 200	39
BRC 36	40	1400	933	120	198	220	80	94	39 x 3	148	65	70	± 200	50
BRC 40	44	1750	1167	130	220	242	91	104	42 x 3	162	70	75	± 200	70
BRC 44	48	2100	1400	140	242	268	97	114	48 x 3	180	80	85	± 200	92
BRC 48	52	2500	1667	150	264	292	107	125	52 x 3	196	90	95	± 200	114
BRC 52	56	2950	1967	170	286	316	117	136	56 x 4	212	95	105	± 200	139
BRC 56	60	3400	2267	180	308	338	122	144	60 x 4	226	105	110	± 200	164
BRC 60	64	3900	2600	190	330	358	131	150	60 x 4	238	115	120	± 200	181
BRC 64	68	4500	3000	200	352	384	141	165	68 x 4	256	125	130	± 250	228
BRC 68	72	5000	3333	220	374	408	151	176	72 x 4	272	130	135	± 250	270
BRC 72	76	5600	3733	230	396	434	157	184	76 x 4	290	140	145	± 250	310
BRC 76	80	6300	4200	240	418	456	171	198	80 x 4	304	150	155	± 250	359
BRC 80	84	7000	4667	250	440	480	182	210	85 x 4	320	155	165	± 250	496
BRC 84	88	7700	5133	270	462	504	191	221	90 x 6	336	165	170	± 250	561
BRC 88	92	8500	5667	280	484	530	202	233	95 x 6	354	175	180	± 250	638
BRC 92	96	9300	6200	290	506	560	212	251	105 x 6	376	185	190	± 250	761
BRC 96	100	10100	6733	300	528	584	222	263	110 x 6	392	190	200	± 250	852
BRC 100	104	10900	7267	310	550	608	232	274	115 x 6	408	195	205	± 300	949
BRC 104	108	11800	7867	330	572	632	242	286	120 x 6	424	205	215	± 300	1063
BRC 108	112	12700	8467	340	594	652	252	293	120 x 6	436	210	225	± 300	1125
BRC 112	116	13900	9267	350	616	682	272	317	130 x 6	458	215	230	± 300	1314
BRC 116	120	14900	9933	360	638	702	282	324	130 x 6	470	225	240	± 300	1387
BRC 120	124	15900	10600	380	660	726	292	336	135 x 6	486	230	250	± 300	1533
BRC 124	128	17000	11333	390	682	750	303	348	140 x 6	502	240	255	± 300	1674
BRC 128	132	18100	12067	400	704	774	313	360	145 x 6	518	250	265	± 300	1822
BRC 132	136	19200	12800	410	726	800	323	372	150 x 6	536	255	270	± 300	1981
BRC 136	140	20400	13600	430	748	830	333	389	160 x 6	558	265	280	± 300	2232
BRC 140	144	21600	14400	440	770	858	343	406	170 x 6	578	270	290	± 300	2479
BRC 144	148	22900	15267	450	792	890	353	423	180 x 6	602	280	300	± 300	2749
BRC 148	152	24300	16200	460	814	914	363	435	185 x 6	618	290	310	± 300	2948
BRC 152	156	25600	17067	480	836	938	373	446	190 x 6	634	300	320	± 300	3178
BRC 156	160	26900	17933	490	858	962	383	458	195 x 6	650	310	330	± 300	3398

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Adj. Adjustment

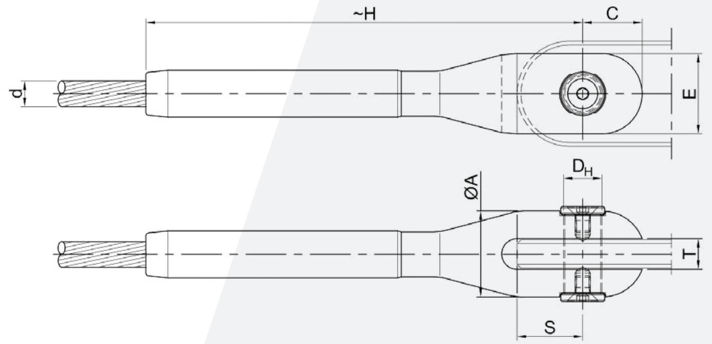
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

OPEN SWAGED SOCKET
42CrMo4

MAC



PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	DH (mm)	S (mm)	T (mm)
MAC 6	34	20	6	23	102	15	21	10	16	8
MAC 8	60	36	8	29	133	19	26	12	20	10
MAC 10	94	56	10	35	165	24	32	15	25	12
MAC 12	135	81	12	42	197	28	38	18	29	15
MAC 14	184	110	14	46	227	31	43	20	35	15
MAC 16	240	144	16	54	262	37	50	24	40	18
MAC 18	304	182	18	62	295	42	57	27	45	22
MAC 20	380	228	20	67	327	46	63	30	51	22
MAC 22	460	276	22	72	356	49	67	32	54	25
MAC 24	545	327	24	77	388	54	72	35	61	25
MAC 26	640	384	26	82	421	57	77	37	67	25
MAC 28	745	447	28	89	451	62	83	40	69	30
MAC 30	856	514	30	95	484	66	89	42	75	30
MAC 32	970	582	32	100	516	70	94	46	81	32
MAC 34	1096	658	34	110	551	76	104	49	86	35
MAC 36	1230	738	36	115	582	80	108	51	90	37
MAC 38	1371	823	38	121	611	83	113	53	93	40
MAC 40	1520	912	40	126	644	87	119	56	100	40
MAC 42	1676	1006	42	132	676	91	124	58	104	42

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

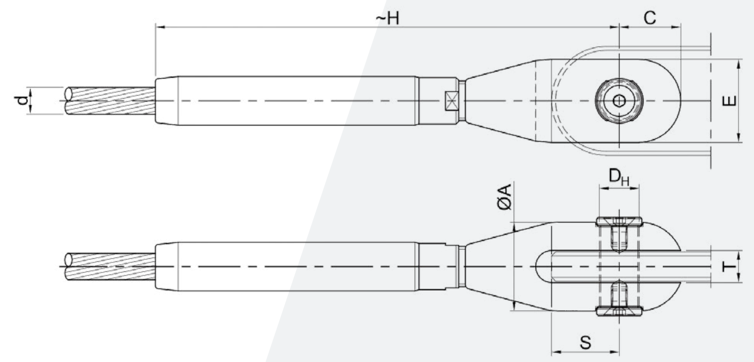
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE OPEN SWAGED SOCKET
42CrMo4

MAC-R

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	DH (mm)	S (mm)	T (mm)	Adj. (mm)
MAC-R 6	34	20	6	23	111	15	21	10	16	8	± 3
MAC-R 8	60	36	8	29	145	19	26	12	20	10	± 4
MAC-R 10	94	56	10	35	180	24	32	15	25	12	± 5
MAC-R 12	135	81	12	42	215	28	38	18	29	15	± 6
MAC-R 14	184	110	14	46	248	31	43	20	35	15	± 7
MAC-R 16	240	144	16	54	286	37	50	24	40	18	± 8
MAC-R 18	304	182	18	62	322	42	57	27	45	22	± 9
MAC-R 20	380	228	20	67	357	46	63	30	51	22	± 10
MAC-R 22	460	276	22	72	389	49	67	32	54	25	± 11
MAC-R 24	545	327	24	77	424	54	72	35	61	25	± 12
MAC-R 26	640	384	26	82	460	57	77	37	67	25	± 13
MAC-R 28	745	447	28	89	493	62	83	40	69	30	± 14
MAC-R 30	856	514	30	95	529	66	89	42	75	30	± 15
MAC-R 32	970	582	32	100	564	70	94	46	81	32	± 16
MAC-R 34	1096	658	34	110	602	76	104	49	86	35	± 17
MAC-R 36	1230	738	36	115	636	80	108	51	90	37	± 18
MAC-R 38	1371	823	38	121	668	83	113	53	93	40	± 19
MAC-R 40	1520	912	40	126	704	87	119	56	100	40	± 20
MAC-R 42	1676	1006	42	132	739	91	124	58	104	42	± 21



d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
Adj. Adjustment

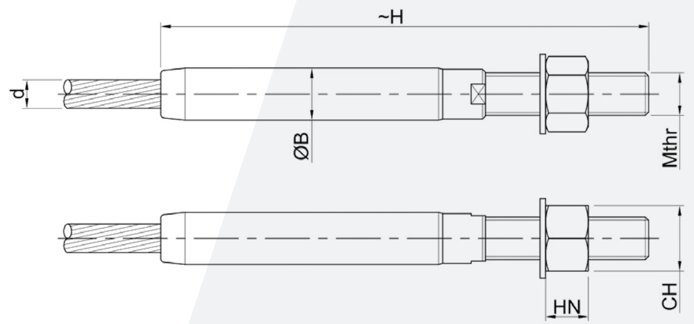
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

SWAGED FITTING
42CrMo4

FLT

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØB (mm)	~H (mm)	Mthr (mm)	Pitch (mm)	Lthr (mm)	CH (mm)	HN (mm)
FLT 6	34	20	6	12	101	8	1,25	36	13	8
FLT 8	60	36	8	15	137	12	1,75	50	18	12
FLT 10	94	56	10	18	166	14	2	58	21	14
FLT 12	135	81	12	23	197	16	2	67	24	16
FLT 14	184	110	14	30	231	20	2,5	80	30	20
FLT 16	240	144	16	30	266	24	3	93	36	24
FLT 18	304	182	18	37	298	27	3	104	41	27
FLT 20	380	228	20	37	330	30	3,5	114	46	30
FLT 22	460	276	22	40	366	33	3,5	129	50	33
FLT 24	545	327	24	47	399	36	3	140	55	36
FLT 26	640	384	26	47	431	39	3	151	60	39
FLT 28	745	447	28	53	463	42	3	161	65	42
FLT 30	856	514	30	61	495	45	3	172	70	45
FLT 32	970	582	32	61	526	48	3	181	75	48
FLT 34	1096	658	34	67	561	52	3	194	80	52
FLT 36	1230	738	36	67	587	52	3	199	80	52
FLT 38	1371	823	38	74	621	56	4	211	85	56
FLT 40	1520	912	40	74	654	60	4	223	90	60
FLT 42	1676	1006	42	80	688	64	4	235	95	64



d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

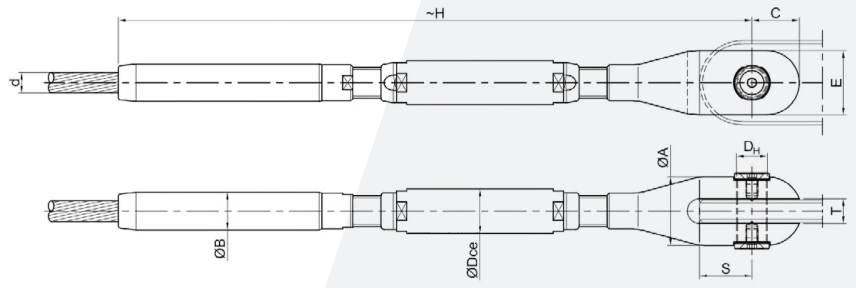
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

TURNBUCKLE
42CrMo4

TBC

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	D_H (mm)	Dce (mm)	B (mm)	S (mm)	T (mm)	Adj. (mm)
TBC 6	34	20	6	23	202	15	21	10	13	13	16	8	± 20
TBC 8	60	36	8	29	267	19	26	12	18	16	20	10	± 25
TBC 10	94	56	10	35	323	24	32	15	21	20	25	12	± 30
TBC 12	135	81	12	42	381	28	38	18	24	25	29	15	± 35
TBC 14	184	110	14	46	443	31	43	20	29	32	35	15	± 40
TBC 16	240	144	16	54	510	37	50	24	34	32	40	18	± 45
TBC 18	304	182	18	62	573	42	57	27	37	39	45	22	± 50
TBC 20	380	228	20	67	633	46	63	30	43	39	51	22	± 55
TBC 22	460	276	22	72	705	49	67	32	46	43	54	25	± 65
TBC 24	545	327	24	77	767	54	72	35	49	50	61	25	± 70
TBC 26	640	384	26	82	830	57	77	37	53	50	67	25	± 75
TBC 28	745	447	28	89	888	62	83	40	57	57	69	30	± 80
TBC 30	856	514	30	95	951	66	89	42	60	64	75	30	± 85
TBC 32	970	582	32	100	1009	70	94	46	64	64	81	32	± 90
TBC 34	1096	658	34	110	1078	76	104	49	69	71	86	35	± 95
TBC 36	1230	738	36	115	1127	80	108	51	70	71	90	37	± 100
TBC 38	1371	823	38	121	1188	83	113	53	74	78	93	40	± 105
TBC 40	1520	912	40	126	1253	87	119	56	79	78	100	40	± 110
TBC 42	1676	1006	42	132	1317	91	124	58	84	85	104	42	± 115



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

Adj. Adjustment

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

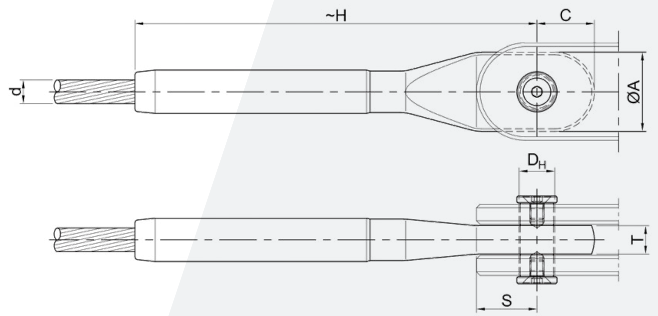
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

CLOSED SWAGED SOCKET
42CrMo4

MCC

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	D_H (mm)	S (mm)	T (mm)
MCC 6	34	20	6	23	102	17	10	16	8
MCC 8	60	36	8	29	133	21	12	20	10
MCC 10	94	56	10	35	165	25	15	25	12
MCC 12	135	81	12	42	197	30	18	29	14
MCC 14	184	110	14	46	227	33	20	35	16
MCC 16	240	144	16	54	262	39	24	40	19
MCC 18	304	182	18	62	295	45	27	45	20
MCC 20	380	228	20	67	327	49	30	51	22
MCC 22	460	276	22	72	356	52	32	54	26
MCC 24	545	327	24	77	388	56	35	61	31
MCC 26	640	384	26	82	421	60	37	67	31
MCC 28	745	447	28	89	451	65	40	69	34
MCC 30	856	514	30	95	484	69	42	75	36
MCC 32	970	582	32	100	516	73	46	81	42
MCC 34	1096	658	34	110	551	80	49	86	44
MCC 36	1230	738	36	115	582	83	51	90	48
MCC 38	1371	823	38	121	611	87	53	93	52
MCC 40	1520	912	40	126	644	91	56	100	56
MCC 42	1676	1006	42	132	676	95	58	104	60



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

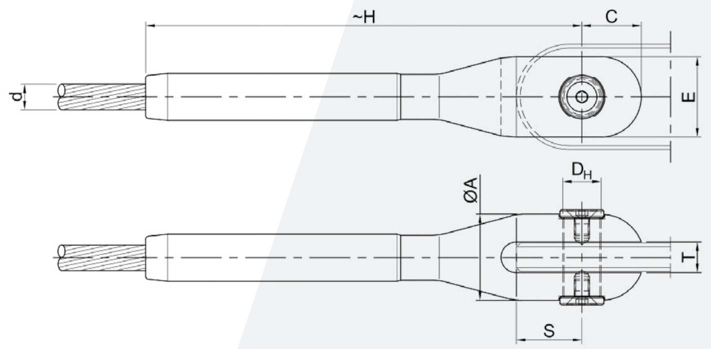
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

OPEN SWAGED SOCKET
S355J2

MAC

PRODUCT CODE	N_{uk} [1] (kN)	N_{Rd} [2] (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	DH (mm)	S (mm)	T (mm)
MAC 6	34	20	6	25	104	16	23	10	16	8
MAC 8	60	36	8	32	136	21	30	13	21	10
MAC 10	94	56	10	38	167	25	35	15	25	12
MAC 12	135	81	12	47	202	31	44	19	31	15
MAC 14	184	110	14	51	233	35	48	21	36	15
MAC 16	240	144	16	60	268	41	57	25	42	18
MAC 18	304	182	18	69	301	46	65	28	45	22
MAC 20	380	228	20	74	334	50	70	30	51	22
MAC 22	460	276	22	81	366	55	76	33	56	25
MAC 24	545	327	24	87	399	59	83	36	62	25
MAC 26	640	384	26	92	431	63	88	38	68	25
MAC 28	745	447	28	103	465	69	98	41	71	30
MAC 30	856	514	30	109	500	75	104	45	79	30
MAC 32	970	582	32	116	532	79	111	48	83	32
MAC 34	1096	658	34	124	566	85	118	51	88	35
MAC 36	1230	738	36	132	600	90	126	54	93	37
MAC 38	1371	823	38	139	631	94	133	56	96	40
MAC 40	1520	912	40	144	665	98	138	59	104	40
MAC 42	1676	1006	42	154	703	106	148	64	111	42



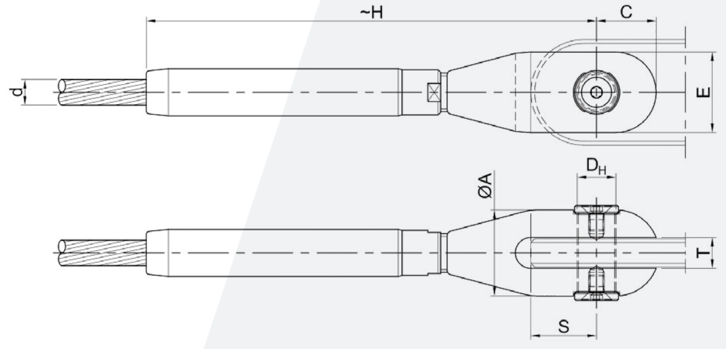
d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE OPEN SWAGED SOCKET
S355J2

MAC-R

PRODUCT CODE	N_{uk} [1] (kN)	N_{Rd} [2] (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	DH (mm)	S (mm)	T (mm)	Adj. (mm)
MAC-R 6	34	20	6	25	113	16	23	10	16	8	± 3
MAC-R 8	60	36	8	32	148	21	30	13	21	10	± 4
MAC-R 10	94	56	10	38	182	25	35	15	25	12	± 5
MAC-R 12	135	81	12	47	220	31	44	19	31	15	± 6
MAC-R 14	184	110	14	51	254	35	48	21	36	15	± 7
MAC-R 16	240	144	16	60	292	41	57	25	42	18	± 8
MAC-R 18	304	182	18	69	328	46	65	28	45	22	± 9
MAC-R 20	380	228	20	74	364	50	70	30	51	22	± 10
MAC-R 22	460	276	22	81	399	55	76	33	56	25	± 11
MAC-R 24	545	327	24	87	435	59	83	36	62	25	± 12
MAC-R 26	640	384	26	92	470	63	88	38	68	25	± 13
MAC-R 28	745	447	28	103	507	69	98	41	71	30	± 14
MAC-R 30	856	514	30	109	545	75	104	45	79	30	± 15
MAC-R 32	970	582	32	116	580	79	111	48	83	32	± 16
MAC-R 34	1096	658	34	124	617	85	118	51	88	35	± 17
MAC-R 36	1230	738	36	132	654	90	126	54	93	37	± 18
MAC-R 38	1371	823	38	139	688	94	133	56	96	40	± 19
MAC-R 40	1520	912	40	144	725	98	138	59	104	40	± 20
MAC-R 42	1676	1006	42	154	766	106	148	64	111	42	± 21



d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
Adj. Adjustment

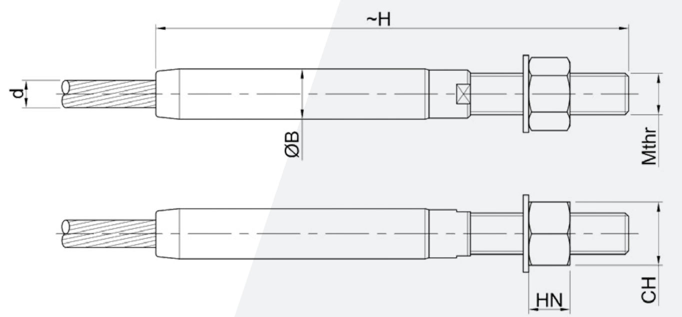
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

SWAGED FITTING
S355J2

FLT

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØB (mm)	~H (mm)	Mthr (mm)	Pitch (mm)	Lthr (mm)	CH (mm)	HN (mm)
FLT 6	34	20	6	12	110	12	1,75	45	18	12
FLT 8	60	36	8	15	144	16	2	57	24	16
FLT 10	94	56	10	18	178	20	2,5	70	30	20
FLT 12	135	81	12	23	213	24	3	83	36	24
FLT 14	184	110	14	30	245	27	3	94	41	27
FLT 16	240	144	16	30	277	30	3,5	104	46	30
FLT 18	304	182	18	37	308	33	3,5	114	50	33
FLT 20	380	228	20	37	341	36	3	125	55	36
FLT 22	460	276	22	40	378	39	3	141	60	39
FLT 24	545	327	24	47	410	42	3	151	65	42
FLT 26	640	384	26	47	442	45	3	162	70	45
FLT 28	745	447	28	53	481	52	3	179	80	52
FLT 30	856	514	30	61	514	56	4	191	85	56
FLT 32	970	582	32	61	548	60	4	203	90	60
FLT 34	1096	658	34	67	582	64	4	215	95	64
FLT 36	1230	738	36	67	608	64	4	220	95	64
FLT 38	1371	823	38	74	642	68	4	232	100	68
FLT 40	1520	912	40	74	676	72	4	245	105	72
FLT 42	1676	1006	42	80	710	76	4	257	110	76



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

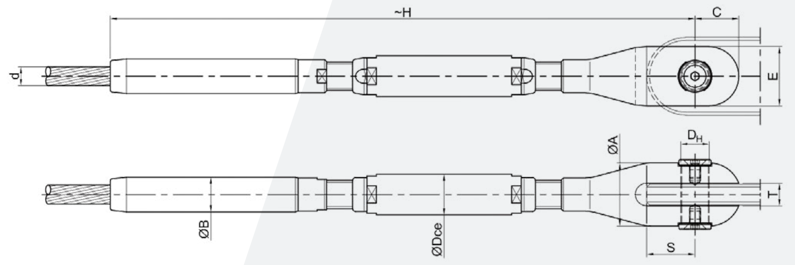
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

TURNBUCKLE
S355J2

TBC

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	D_H (mm)	Dce (mm)	B (mm)	S (mm)	T (mm)	Adj. (mm)
TBC 6	34	20	6	25	220	16	23	10	19	12	16	8	± 20
TBC 8	60	36	8	32	284	21	30	13	24	15	21	10	± 25
TBC 10	94	56	10	38	347	25	35	15	29	18	25	12	± 30
TBC 12	135	81	12	47	414	31	44	19	35	23	31	15	± 35
TBC 14	184	110	14	51	475	35	48	21	39	30	36	15	± 40
TBC 16	240	144	16	60	538	41	57	25	45	30	42	18	± 45
TBC 18	304	182	18	69	599	46	65	28	50	37	45	22	± 50
TBC 20	380	228	20	74	662	50	70	30	54	37	51	22	± 55
TBC 22	460	276	22	81	739	55	76	33	59	40	56	25	± 65
TBC 24	545	327	24	87	800	59	83	36	64	47	62	25	± 70
TBC 26	640	384	26	92	862	63	88	38	69	47	68	25	± 75
TBC 28	745	447	28	103	938	69	98	41	78	53	71	30	± 80
TBC 30	856	514	30	109	1005	75	104	45	84	61	79	30	± 85
TBC 32	970	582	32	116	1069	79	111	48	90	61	83	32	± 90
TBC 34	1096	658	34	124	1135	85	118	51	96	67	88	35	± 95
TBC 36	1230	738	36	132	1187	90	126	54	98	67	93	37	± 100
TBC 38	1371	823	38	139	1250	94	133	56	104	74	96	40	± 105
TBC 40	1520	912	40	144	1318	98	138	59	110	74	104	40	± 110
TBC 42	1676	1006	42	154	1388	106	148	64	116	80	111	42	± 115



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

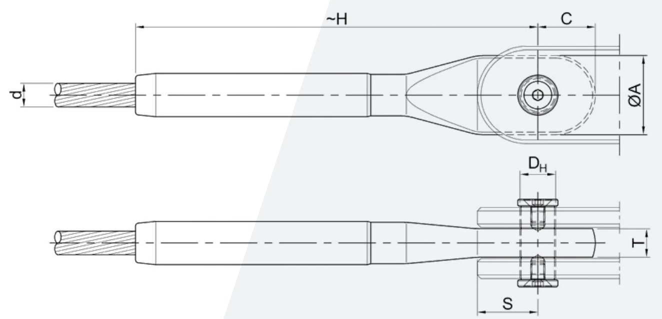
Adj. Adjustment

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

CLOSED SWAGED SOCKET
S355J2

MCC

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	D_H (mm)	S (mm)	T (mm)
MCC 6	34	20	6	25	104	18	10	16	12
MCC 8	60	36	8	32	136	23	13	21	14
MCC 10	94	56	10	38	167	27	15	25	17
MCC 12	135	81	12	47	202	33	19	31	21
MCC 14	184	110	14	51	233	36	21	36	24
MCC 16	240	144	16	60	268	43	25	42	33
MCC 18	304	182	18	69	301	49	28	45	36
MCC 20	380	228	20	74	334	52	30	51	38
MCC 22	460	276	22	81	366	57	33	56	42
MCC 24	545	327	24	87	399	62	36	62	49
MCC 26	640	384	26	92	431	65	38	68	53
MCC 28	745	447	28	103	465	72	41	71	57
MCC 30	856	514	30	109	500	77	45	79	62
MCC 32	970	582	32	116	532	82	48	83	68
MCC 34	1096	658	34	124	566	88	51	88	73
MCC 36	1230	738	36	132	600	93	54	93	79
MCC 38	1371	823	38	139	631	98	56	96	82
MCC 40	1520	912	40	144	665	102	59	104	90
MCC 42	1676	1006	42	154	703	109	64	111	97



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

CORROSION PROTECTION

Galvanised Wires

Round and Z-shaped wires comply with the requirements of EN 10264-2 and EN 10264-3 Class A.

DIAMETER OF ROUND WIRES	MINIMUM AREA MASS OF COATING
0.4-7 mm	85-300 g/m²

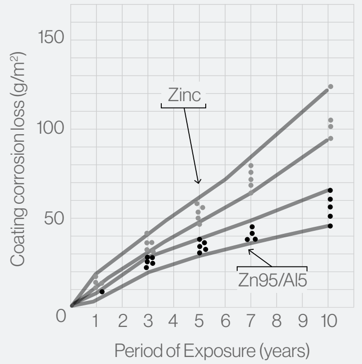
HEIGHT OF Z-WIRES	MINIMUM AREA MASS OF COATING
2-8 mm	215-300 g/m²

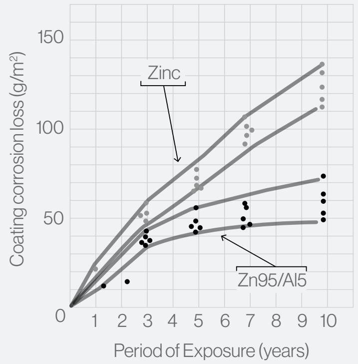
The hot dip galvanising process ensures a zinc layer is firmly alloyed and chemically bonded with the underlying steel wire. The zinc coating isolates the wires from the external corrosive agents and acts as sacrificial material when in contact with air. The adherence of zinc coating on wires is tested in accordance with EN 12385-10.

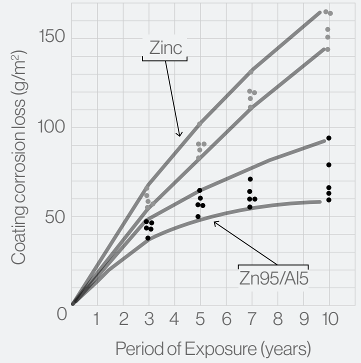
Zinc-Aluminium Coated Wires

A layer of Zn95/Al5 coating is applied to the outer layers of wires. The passive corrosion inhibition of the aluminium oxidation significantly improves the overall corrosion protection of zinc. When zinc is exposed to oxygen and water it acts as anodic material which is initially sacrificed. The aluminium content then reacts with the external elements and forms an aluminium oxide, which creates a protective layer across the wire surface. The aluminium oxide is stable and creates an effective passive barrier protection.

Exposure tests in different environments prove the reduced rate of corrosion of Zn95/Al5 coated wires compared to galvanised wires.







Round and shaped wires are coated with a minimum thickness of Zn95/Al5 coating of 300 g/m².

The adherence of the coating on wires is tested in accordance with EN 12385-10.

Internal Cables Corrosion Protection

OSS and FLC cables are internally filled with Tensofill which prevents the entry and diffusion of moisture inside the cable and provides additional protection to the galvanised wires. Tensofill is a compound made up as a Severe Atmospheric Corrosion Inhibitor and Zinc powder in an optimised quantity to obtain the best performance in terms of corrosion resistance.

Tensofill has the following properties:

- Brookfield Viscosity (A4V 20 RPM): 10000 cps
- Specific weight: 1.27 kg/dm³
- Resistance to salt fog (ASTM B117): 500 hours
- Resistance to humid state: 500 hours

Surface Corrosion Protection on Cables and Sockets

External corrosion protection Tensocoat wax can be applied on cables and sockets after installation and tensioning of cables as an additional stage corrosion protection barrier. Tensocoat is a compound made up as a Severe Atmosphere Corrosion Inhibitor with Resin. It combines anticorrosive, waterproof and reflective properties within its constituents. The product is highly flexible and suitable to seal the wire interstices. Tensocoat is available in light aluminium metallic grey (aluminium micro-flakes) or matt white (titanium micro-flakes).

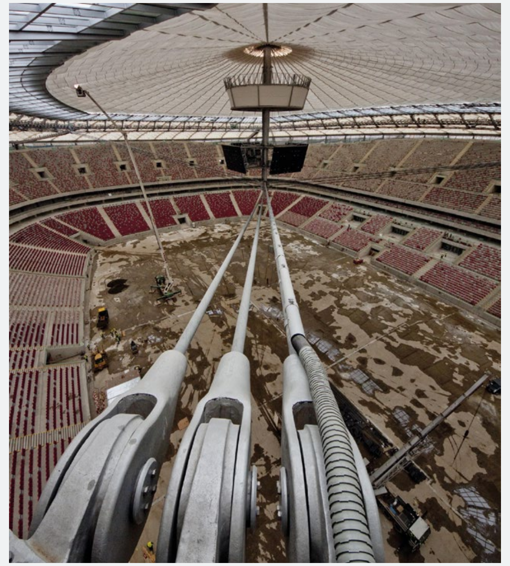
Tensocoat Wax has the following properties:

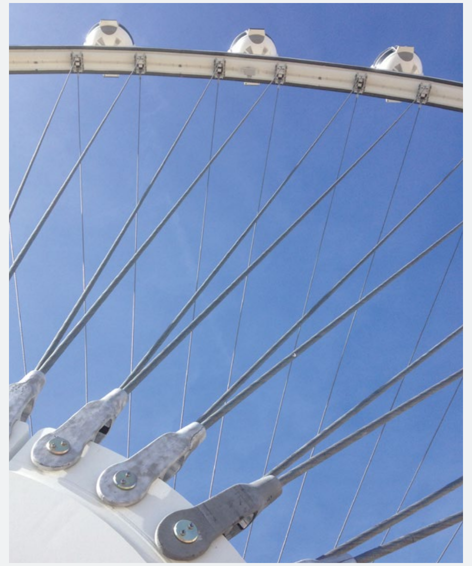
- Specific mass: 1.0 kg/dm³
- Dry mass: 56%
- Resin (on dry mass): 25 %

Tensocoat is applied using single brush strokes after cleaning the area to be protected. The product can be removed and re-applied for inspection purposes.

SOCKETS

	MATERIAL	CORROSION PROTECTION	NDT EXAMINATION
Fix Fork Socket TTF Adjustable Fork Socket TBF Socket Body for Bridge Socket BRC	High strength steel casting G24 Mn6 (EN 10340), BT1 (BS 3100) or G18 NiMoCr3-6 (EN 10340) quenched and tempered	Hot dip galvanising with minimum 85 µm thickness (EN 1461)	• Ultrasonic Test (EN 12680-1) • Magnetoscopic Test (EN 1369) • Visual Inspection (EN 1370) • Dimensional Control (ISO 8062-3) • Radiographic Examination (EN 12681) upon request
Socket body for TBF Cylindrical sockets type CYF, CYS, CYT, CYN, CYW, CYB, CYR, CYV, CYM, CYC and CYA Pin for TTF socket, TBF socket Pin for BRC socket Pin for MAC, MAC-R, TBC, MCC swaged socket Bush for CYB, CYR Nuts for CYT, CYN, CYW	High strength alloy steel CrNiMo (EN ISO 683), rolled or forged, quenched and tempered.	Hot dip galvanising with minimum 85 µm thickness (EN 1461)	• Ultrasonic Test (EN 10308) • Dimensional Control (EN 22768-2 for machining, ISO 965-1 for threads)
Threaded rods and nuts for sockets type CYB, CYR, CYV, CYM and BRC Coupler for sockets type TBF, CYC and CYA	High strength alloy steel 42CrMo4 (EN ISO 683), B7 (ASTM A193) or 2H (ASTM A194)	Hot dip galvanising with bright threads/ Geomet	• Ultrasonic Test (EN 10308) • Magnetoscopic Test (EN 10228-1) only on nuts • Visual Examination • Dimensional Control (EN 22768-2 for machining, ISO 965-1 for threads)
Lock plates for TTF/TBF socket pin Washers for CYW, CYR, CYV	S355J2 (EN 10025)	Hot dip galvanising with minimum 85 µm thickness (EN 1461)	
Swaged Sockets type MAC, MAC-R, MCC, TBC and FLT	42CrMo4 (EN ISO 683) or S355J2 (EN 10025)	Hot dip galvanising (centrifuged) with minimum 55 µm thickness (EN 1461)	• Ultrasonic Test (EN 10308) • Visual and Dimensional Inspection





HDPE CABLE SYSTEM

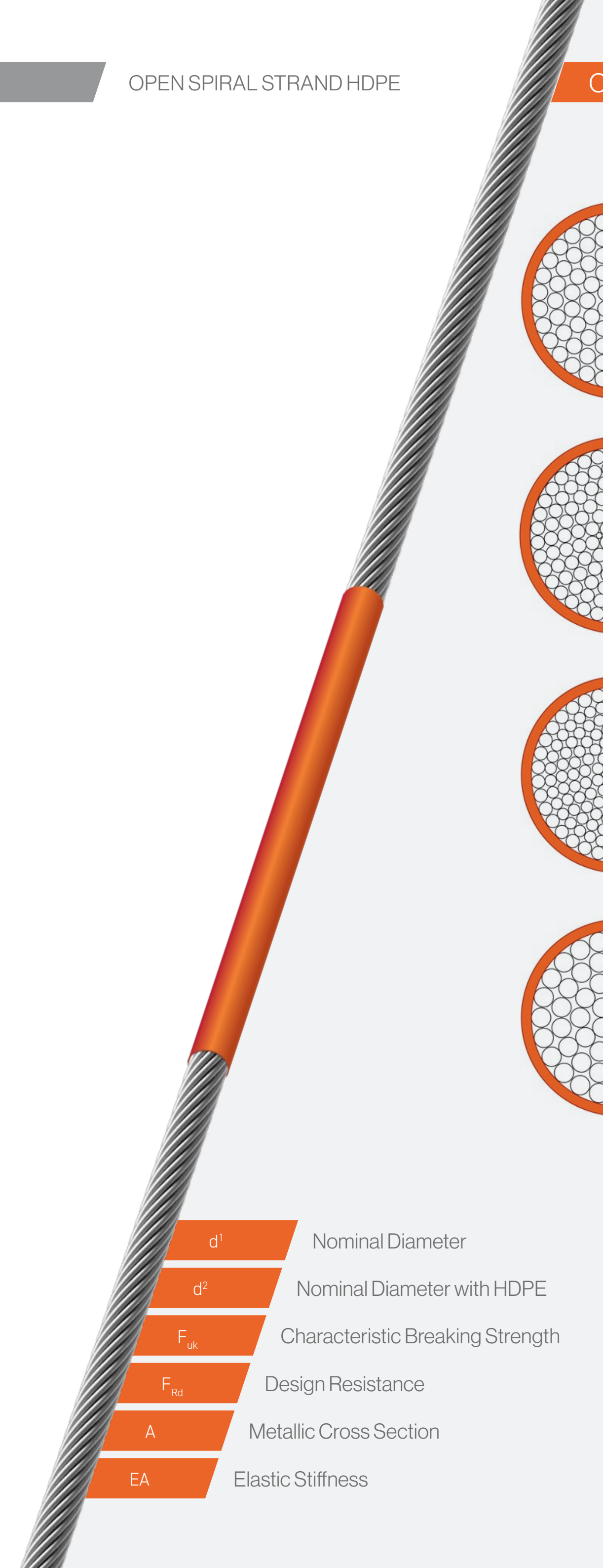
TECHNICAL PRODUCT DATA

HDPE

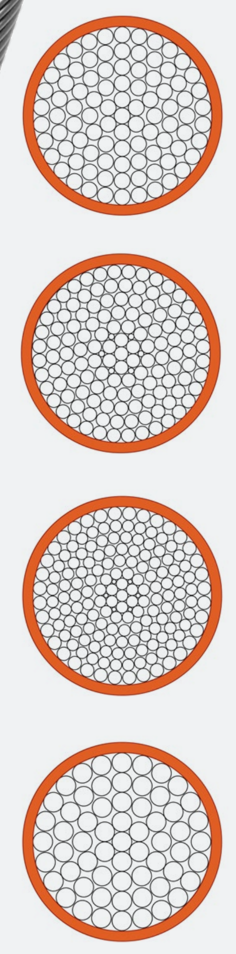
High Density Polyethylene (HDPE) can be applied to structural cables for improving corrosion protection, increasing visibility and for architectural, aesthetic reasons.

This option has an impact on the sockets choice which are specifically designed and manufactured to accommodate the additional HDPE layer within the socket neck.

OPEN SPIRAL STRAND HDPE



OSSH

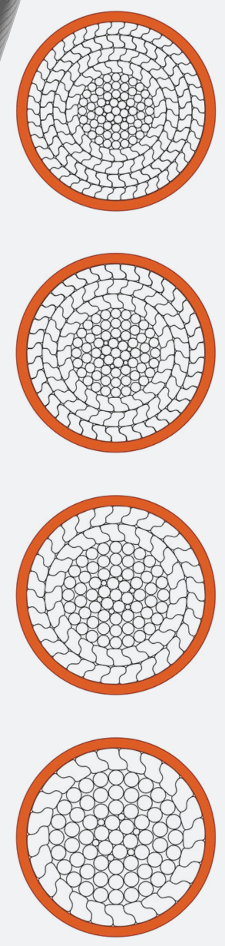


PRODUCT CODE	d^1 (mm)	d^2 (mm)	F_{uk} (1) (kN)	F_{Rd} (2) (kN)	A (mm²)	EA (MN)	Mass (kg/m)
OSSH 8	8	15	60	40	39	6,5	0,4
OSSH 12	12	19	135	90	88	14,6	0,9
OSSH 16	16	23	240	160	157	26	1,5
OSSH 20	20	27	380	253	245	40	2,3
OSSH 24	24	31	545	363	353	58	3,2
OSSH 28	28	35	745	497	480	79	4,3
OSSH 32	32	40	970	647	628	104	5,6
OSSH 36	36	44	1230	820	794	131	7,0
OSSH 40	40	48	1520	1013	981	162	8,6
OSSH 44	44	52	1840	1227	1186	196	10,4
OSSH 48	48	56	2190	1460	1412	233	12,3
OSSH 52	52	60	2570	1713	1657	273	14,4
OSSH 56	56	64	2980	1987	1922	317	16,6
OSSH 60	60	70	3425	2283	2206	364	19,2
OSSH 64	64	74	3870	2580	2510	409	21,8
OSSH 68	68	78	4355	2903	2834	462	24,5
OSSH 72	72	82	4870	3247	3177	518	27,4
OSSH 76	76	86	5410	3607	3540	577	30,4
OSSH 80	80	90	5980	3987	3922	639	33,6
OSSH 84	84	94	6580	4387	4324	705	37,0
OSSH 88	88	98	7210	4807	4746	774	40,6
OSSH 92	92	104	7870	5247	5187	846	44,6
OSSH 96	96	108	8560	5707	5648	921	48,5
OSSH 100	100	112	9275	6183	6128	999	52,5
OSH 104	104	116	10025	6683	6629	1080	56,7
OSH 108	108	120	10800	7200	7148	1165	61,0
OSH 112	112	124	11605	7737	7688	1253	65,6
OSH 116	116	128	12440	8293	8246	1344	70,2
OSH 120	120	132	13305	8870	8825	1438	75,1

- d^1 Nominal Diameter
- d^2 Nominal Diameter with HDPE
- F_{uk} Characteristic Breaking Strength
- F_{Rd} Design Resistance
- A Metallic Cross Section
- EA Elastic Stiffness

(1) Characteristic Breaking Strength F_{uk} = Minimum Breaking Force F_{min} x Loss Factor ke (ke = 1) where ke = 1 for metal/resin filled socket
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can propose alternative cable diameters and cable characteristics.

FLCH

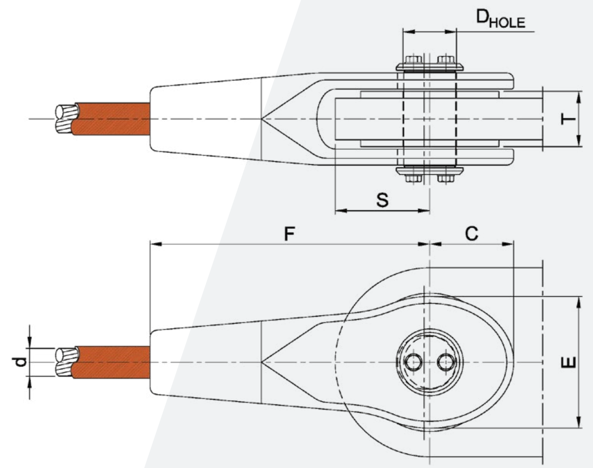


PRODUCT CODE	d^1 (mm)	d^2 (mm)	F_{uk} (1) (kN)	F_{Rd} (2) (kN)	A (mm^2)	EA (MN)	Mass (kg/m)
FLCH 16	16	23	255	170	170	28	1,6
FLCH 20	20	27	395	263	266	44	2,5
FLCH 24	24	31	575	383	383	63	3,5
FLCH 28	28	35	780	520	521	86	4,7
FLCH 32	32	40	1020	680	681	112	6,1
FLCH 36	36	44	1295	863	862	142	7,7
FLCH 40	40	48	1615	1077	1077	178	9,5
FLCH 44	44	52	1955	1303	1303	215	11,4
FLCH 48	48	56	2330	1553	1551	256	13,5
FLCH 52	52	60	2765	1843	1841	304	16,0
FLCH 56	56	64	3205	2137	2136	352	18,5
FLCH 60	60	70	3680	2453	2452	405	21,4
FLCH 64	64	74	4190	2793	2789	460	24,3
FLCH 68	68	78	4730	3153	3149	513	27,3
FLCH 72	72	82	5235	3490	3530	575	30,6
FLCH 76	76	86	5815	3877	3933	641	34,0
FLCH 80	80	90	6425	4283	4358	710	37,6
FLCH 84	84	94	7070	4713	4805	783	41,4
FLCH 88	88	98	7745	5163	5274	860	45,3
FLCH 92	92	104	8450	5633	5764	940	49,8
FLCH 96	96	108	9185	6123	6276	1023	54,1
FLCH 100	100	112	10075	6717	6890	1123	59,3
FLCH 104	104	116	10880	7253	7452	1215	64,0
FLCH 108	108	120	11725	7817	8037	1310	69,0
FLCH 112	112	124	12745	8497	8744	1425	74,9
FLCH 116	116	128	13660	9107	9379	1529	80,3
FLCH 120	120	132	14605	9737	10037	1636	85,8
FLCH 124	124	136	15585	10390	10718	1747	91,6
FLCH 128	128	140	16790	11193	11551	1883	98,6
FLCH 132	132	146	17845	11897	12285	1966	105,2
FLCH 136	136	150	18935	12623	13040	2086	111,6
FLCH 140	140	154	20055	13370	13819	2211	118,2
FLCH 144	144	158	21205	14137	14620	2339	124,9
FLCH 148	148	162	22395	14930	15443	2471	131,8
FLCH 152	152	166	23610	15740	16289	2606	139,0
FLCH 156	156	170	24860	16573	17158	2745	146,3

(1) Characteristic Breaking Strength F_{uk} = Minimum Breaking Force F_{min} x Loss Factor ke (ke = 1) where ke = 1 for metal/resin filled socket
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can propose alternative cable diameters and cable characteristics.

- d^1 Nominal Diameter
- d^2 Nominal Diameter with HDPE
- F_{uk} Characteristic Breaking Strength
- F_{Rd} Design Resistance
- A Metallic Cross Section
- EA Elastic Stiffness

TTFH



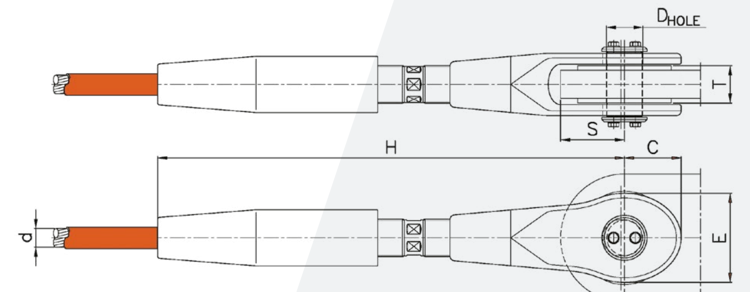
PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	C (mm)	D_{HOLE} (mm)	E (mm)	F (mm)	S_{max} (mm)	T_{min} (mm)	T_{max} (mm)	Mass (kg)
TTFH 12	12	190	127	38	25,5	60	139	50	16	22	1,3
TTFH 16	16	320	213	48	32	78	177	60	24	30	2,6
TTFH 20	20	490	327	60	39	94	216	75	30	37	4,6
TTFH 24	24	700	467	72	46	112	258	85	38	45	7,4
TTFH 28	28	970	647	84	54	132	294	100	50	56	12
TTFH 32	32	1285	857	95	61	150	334	110	55	60	18
TTFH 36	36	1615	1077	104	67	164	365	120	65	70	24
TTFH 40	40	1955	1303	120	76	188	411	135	70	75	34
TTFH 44	44	2350	1567	130	83	205	447	145	80	85	46
TTFH 48	48	2765	1843	140	90	220	484	155	90	95	60
TTFH 52	52	3300	2200	154	98	242	520	170	95	105	74
TTFH 56	56	3900	2600	172	109	270	564	185	105	110	93
TTFH 60	60	4400	2933	182	116	286	606	205	115	120	111
TTFH 64	64	5000	3333	196	124	308	642	215	125	130	135
TTFH 68	68	5550	3700	208	131	325	689	230	130	135	159
TTFH 72	72	6250	4167	218	138	345	725	240	140	145	187
TTFH 76	76	7000	4667	232	146	365	760	255	150	155	222
TTFH 80	80	7700	5133	245	154	386	805	270	155	165	262
TTFH 84	84	8500	5667	256	161	404	836	280	165	170	299
TTFH 88	88	9400	6267	282	179	442	882	300	175	180	360
TTFH 92	92	10200	6800	293	187	462	926	315	185	190	413
TTFH 96	96	11100	7400	305	194	482	957	325	190	200	462
TTFH 100	100	12000	8000	320	202	502	1005	345	195	205	525
TTFH 104	104	13000	8667	332	210	522	1036	355	205	215	582
TTFH 108	108	14000	9333	345	218	544	1080	370	210	225	650
TTFH 112	112	15200	10133	362	227	570	1123	385	215	230	728
TTFH 116	116	16150	10767	375	236	592	1159	400	225	240	809
TTFH 120	120	17400	11600	388	243	612	1200	410	230	250	898
TTFH 124	124	18450	12300	400	252	632	1241	430	240	255	984
TTFH 128	128	19800	13200	412	259	650	1277	440	250	265	1084
TTFH 132	132	20900	13933	425	267	672	1308	450	255	270	1175
TTFH 136	136	22200	14800	438	275	692	1349	465	265	280	1287
TTFH 140	140	23500	15667	452	283	715	1385	475	270	290	1400
TTFH 144	144	24850	16567	466	292	736	1421	490	280	300	1530
TTFH 148	148	26250	17500	479	300	756	1457	500	290	310	1650
TTFH 152	152	27700	18467	492	308	776	1493	515	295	320	1783
TTFH 156	156	29150	19433	505	316	796	1529	525	300	330	1923

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- D_{HOLE} Hole Diameter
- S_{max} Considering $T = T_{max}$

HDPE

HDPE ADJUSTABLE FORK SOCKET **TBFH**



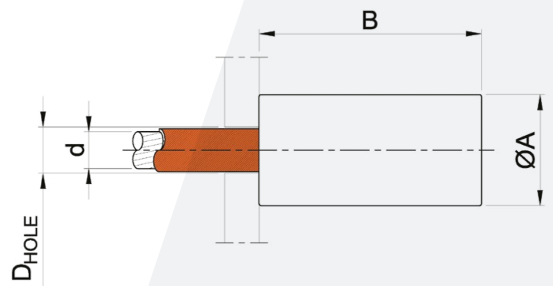
PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	C (mm)	D_{HOLE} (mm)	E (mm)	ØA (mm)	H (mm)	S_{max} (mm)	T_{min} (mm)	T_{max} (mm)	Adj. (mm)	Mass (kg)
TBFH 12	12	190	127	38	26	60	40	329	50	16	22	± 30	2
TBFH 16	16	320	213	48	32	78	55	416	60	24	30	± 40	5
TBFH 20	20	490	327	60	39	94	65	504	75	30	37	± 50	9
TBFH 24	24	700	467	72	46	112	75	615	85	38	45	± 65	16
TBFH 28	28	970	647	84	54	132	90	702	100	50	56	± 75	24
TBFH 32	32	1285	857	95	61	150	100	810	110	55	60	± 90	36
TBFH 36	36	1615	1077	104	67	164	110	904	120	65	70	± 100	49
TBFH 40	40	1955	1303	120	76	188	120	974	135	70	75	± 110	66
TBFH 44	44	2350	1567	130	83	205	130	1098	145	80	85	± 120	88
TBFH 48	48	2765	1843	140	90	220	145	1194	155	90	95	± 130	119
TBFH 52	52	3300	2200	154	98	242	155	1289	170	95	105	± 140	145
TBFH 56	56	3900	2600	172	109	270	165	1392	185	105	110	± 150	182
TBFH 60	60	4400	2933	182	116	286	180	1478	205	115	120	± 160	224
TBFH 64	64	5000	3333	196	124	308	190	1593	215	125	130	± 180	273
TBFH 68	68	5550	3700	208	131	325	200	1714	230	130	135	± 200	323
TBFH 72	72	6250	4167	218	138	345	210	1804	240	140	145	± 200	376
TBFH 76	76	7000	4667	232	146	365	225	1878	255	150	155	± 200	447
TBFH 80	80	7700	5133	245	154	386	235	1972	270	155	165	± 200	517
TBFH 84	84	8500	5667	256	161	404	245	2047	280	165	170	± 200	593
TBFH 88	88	9400	6267	282	179	442	260	2137	300	175	180	± 200	701
TBFH 92	92	10200	6800	293	187	462	270	2254	315	185	190	± 200	800
TBFH 96	96	11100	7400	305	194	482	280	2324	325	190	200	± 200	889
TBFH 100	100	12000	8000	320	202	502	295	2406	345	195	205	± 200	1012
TBFH 104	104	13000	8667	332	210	522	305	2476	355	205	215	± 200	1118
TBFH 108	108	14000	9333	345	218	544	315	2554	370	210	225	± 200	1235
TBFH 112	112	15200	10133	362	227	570	325	2626	385	215	230	± 200	1364
TBFH 116	116	16150	10767	375	236	592	340	2691	400	225	240	± 200	1518
TBFH 120	120	17400	11600	388	243	612	350	2761	410	230	250	± 200	1667
TBFH 124	124	18450	12300	400	252	632	360	2856	430	240	255	± 200	1822
TBFH 128	128	19800	13200	412	259	650	370	2931	440	250	265	± 210	1994
TBFH 132	132	20900	13933	425	267	672	380	2990	450	255	270	± 210	2150
TBFH 136	136	22200	14800	438	275	692	390	3058	465	265	280	± 210	2333
TBFH 140	140	23500	15667	452	283	715	410	3135	475	270	290	± 210	2576
TBFH 144	144	24850	16567	466	292	736	420	3198	490	280	300	± 210	2783
TBFH 148	148	26250	17500	479	300	756	430	3251	500	290	310	± 210	3000
TBFH 152	152	27700	18467	492	308	776	445	3319	515	295	320	± 210	3262
TBFH 156	156	29150	19433	505	316	796	455	3387	525	300	330	± 210	3505

- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- D_{HOLE} Hole Diameter
- S_{max} Considering $T = T_{max}$
- Adj. Adjustment

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HDPE FIX CYLINDRICAL SOCKET **CYFH**



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	Mass (kg)
CYFH 12	12	190	127	40	79	20	0,5
CYFH 16	16	320	213	55	102	26	1,3
CYFH 20	20	490	327	65	126	31	2,2
CYFH 24	24	700	467	75	153	37	3,5
CYFH 28	28	970	647	90	174	43	5,9
CYFH 32	32	1285	857	100	199	48	8,2
CYFH 36	36	1615	1077	110	220	54	11
CYFH 40	40	1955	1303	120	246	59	14
CYFH 44	44	2350	1567	130	272	65	18
CYFH 48	48	2765	1843	145	294	71	25
CYFH 52	52	3300	2200	155	315	76	30
CYFH 56	56	3900	2600	165	339	82	36
CYFH 60	60	4400	2933	180	361	87	47
CYFH 64	64	5000	3333	190	382	93	55
CYFH 68	68	5550	3700	200	409	99	65
CYFH 72	72	6250	4167	210	430	104	74
CYFH 76	76	7000	4667	225	451	110	91
CYFH 80	80	7700	5133	235	475	115	104
CYFH 84	84	8500	5667	245	496	121	117
CYFH 88	88	9400	6267	260	517	127	139
CYFH 92	92	10200	6800	270	541	132	156
CYFH 96	96	11100	7400	280	562	138	172
CYFH 100	100	12000	8000	295	585	143	203
CYFH 104	104	13000	8667	305	606	149	223
CYFH 108	108	14000	9333	315	630	155	245
CYFH 112	112	15200	10133	325	653	160	269
CYFH 116	116	16150	10767	340	674	166	307
CYFH 120	120	17400	11600	350	700	171	338
CYFH 124	124	18450	12300	360	721	177	366
CYFH 128	128	19800	13200	370	742	183	395
CYFH 132	132	20900	13933	380	763	188	426
CYFH 136	136	22200	14800	390	784	194	458
CYFH 140	140	23500	15667	410	805	199	535
CYFH 144	144	24850	16567	420	826	205	573
CYFH 148	148	26250	17500	430	847	211	612
CYFH 152	152	27700	18467	445	868	216	677
CYFH 156	156	29150	19433	455	889	222	721

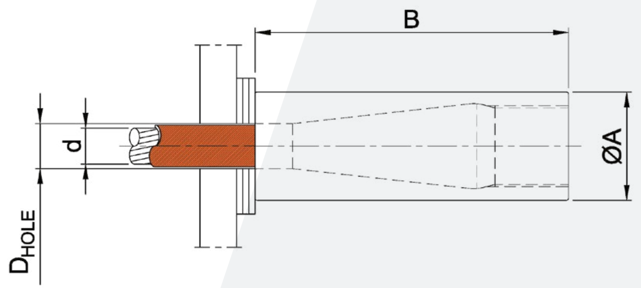
- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- D_{HOLE} Hole Diameter

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE CYLINDRICAL SOCKET WITH SHIMS

CYSH



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	Mass (kg)
CYSH 12	12	190	127	40	116	20	0,7
CYSH 16	16	320	213	55	148	26	1,8
CYSH 20	20	490	327	65	181	31	3,0
CYSH 24	24	700	467	75	217	37	4,5
CYSH 28	28	970	647	90	247	43	7,7
CYSH 32	32	1285	857	100	281	48	11
CYSH 36	36	1615	1077	110	316	54	14
CYSH 40	40	1955	1303	120	351	59	18
CYSH 44	44	2350	1567	130	386	65	23
CYSH 48	48	2765	1843	145	417	71	32
CYSH 52	52	3300	2200	155	447	76	39
CYSH 56	56	3900	2600	165	480	82	46
CYSH 60	60	4400	2933	180	511	87	60
CYSH 64	64	5000	3333	190	541	93	69
CYSH 68	68	5550	3700	200	577	99	82
CYSH 72	72	6250	4167	210	607	104	94
CYSH 76	76	7000	4667	225	637	110	115
CYSH 80	80	7700	5133	235	670	115	131
CYSH 84	84	8500	5667	245	700	121	149
CYSH 88	88	9400	6267	260	730	127	177
CYSH 92	92	10200	6800	270	763	132	197
CYSH 96	96	11100	7400	280	793	138	217
CYSH 100	100	12000	8000	295	825	143	259
CYSH 104	104	13000	8667	305	855	149	283
CYSH 108	108	14000	9333	315	888	155	310
CYSH 112	112	15200	10133	325	920	160	339
CYSH 116	116	16150	10767	340	950	166	387
CYSH 120	120	17400	11600	350	985	171	428
CYSH 124	124	18450	12300	360	1015	177	462
CYSH 128	128	19800	13200	370	1045	183	497
CYSH 132	132	20900	13933	380	1075	188	534
CYSH 136	136	22200	14800	390	1105	194	578
CYSH 140	140	23500	15667	410	1135	199	679
CYSH 144	144	24850	16567	420	1165	205	724
CYSH 148	148	26250	17500	430	1195	211	778
CYSH 152	152	27700	18467	445	1225	216	862
CYSH 156	156	29150	19433	455	1255	222	915

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

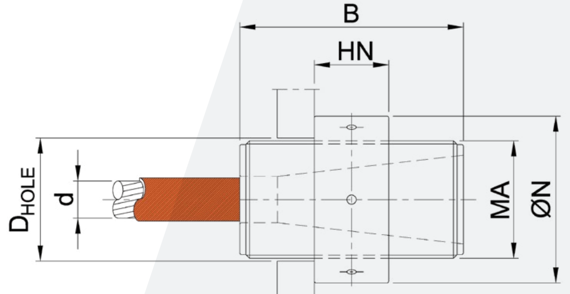
D_{HOLE} Hole Diameter

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE CYLINDRICAL SOCKET ANCHORED BY NUT

CYTH



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	MA (mm)	B (mm)	D_{HOLE} (mm)	ØN (mm)	HN (mm)	Adj. (mm)	Mass (kg)
CYTH 12	12	190	127	45	79	48	65	25	± 24	1,0
CYTH 16	16	320	213	55	102	59	80	35	± 31	1,8
CYTH 20	20	490	327	70	126	75	100	40	± 40	3,7
CYTH 24	24	700	467	80	153	85	115	50	± 48	6,0
CYTH 28	28	970	647	90	174	95	130	60	± 54	8,7
CYTH 32	32	1285	857	105	199	110	150	65	± 64	13
CYTH 36	36	1615	1077	115	220	120	165	75	± 68	18
CYTH 40	40	1955	1303	130	246	135	185	80	± 79	25
CYTH 44	44	2350	1567	140	272	145	200	90	± 87	32
CYTH 48	48	2765	1843	150	294	155	210	100	± 93	39
CYTH 52	52	3300	2200	165	315	170	235	105	± 101	52
CYTH 56	56	3900	2600	175	339	180	245	115	± 108	61
CYTH 60	60	4400	2933	190	361	195	270	120	± 115	78
CYTH 64	64	5000	3333	200	382	208	280	130	± 120	89
CYTH 68	68	5550	3700	210	409	218	295	140	± 129	106
CYTH 72	72	6250	4167	225	430	233	315	145	± 137	128
CYTH 76	76	7000	4667	235	451	245	330	155	± 140	145
CYTH 80	80	7700	5133	250	475	260	350	160	± 149	174
CYTH 84	84	8500	5667	260	496	270	365	170	± 155	197
CYTH 88	88	9400	6267	270	517	280	380	180	± 160	222
CYTH 92	92	10200	6800	285	541	297	400	185	± 168	256
CYTH 96	96	11100	7400	295	562	307	420	195	± 174	291
CYTH 100	100	12000	8000	310	585	322	435	200	± 183	330
CYTH 104	104	13000	8667	320	606	332	450	210	± 188	366
CYTH 108	108	14000	9333	335	630	347	470	220	± 193	414
CYTH 112	112	15200	10133	350	653	365	490	225	± 202	469
CYTH 116	116	16150	10767	360	674	375	510	235	± 207	521
CYTH 120	120	17400	11600	370	700	385	520	240	± 218	562
CYTH 124	124	18450	12300	385	721	405	540	250	± 224	624
CYTH 128	128	19800	13200	395	742	415	560	260	± 229	686
CYTH 132	132	20900	13933	410	763	430	580	265	± 237	760
CYTH 136	136	22200	14800	420	784	440	590	275	± 243	806
CYTH 140	140	23500	15667	435	805	460	610	280	± 251	890
CYTH 144	144	24850	16567	445	826	470	630	290	± 256	969
CYTH 148	148	26250	17500	455	847	480	640	300	± 262	1030
CYTH 152	152	27700	18467	470	868	500	660	305	± 270	1126
CYTH 156	156	29150	19433	485	889	515	680	315	± 275	1235

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

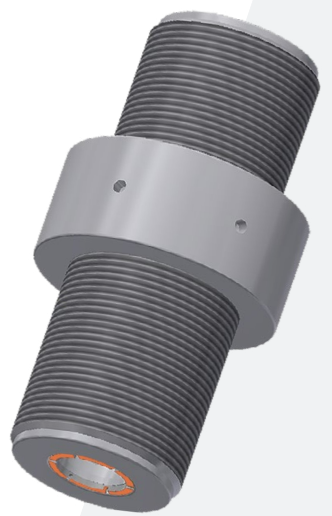
Adj. Adjustment

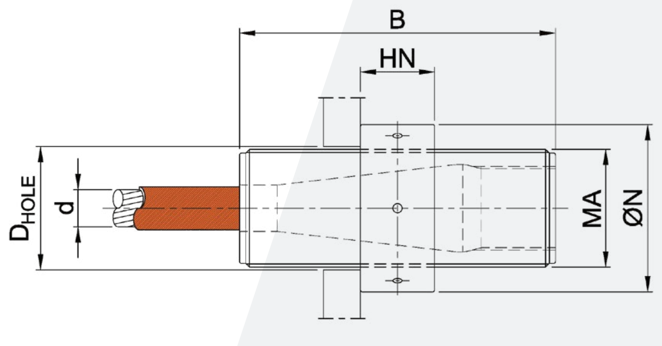
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE CYLINDRICAL SOCKET WITH FLAT NUT

CYNH





PRODUCT CODE	d_{max} (mm)	N_{uk} [(1)] (kN)	N_{Rd} [(2)] (kN)	MA (mm)	B (mm)	D_{HOLE} (mm)	ØN (mm)	HN (mm)	Adj. (mm)	Mass (kg)
CYNH 12	12	190	127	45	116	48	65	25	± 43	1,2
CYNH 16	16	320	213	55	148	59	80	35	± 54	2,2
CYNH 20	20	490	327	70	181	75	100	40	± 68	4,5
CYNH 24	24	700	467	80	217	85	115	50	± 81	7,0
CYNH 28	28	970	647	90	247	95	130	60	± 91	10
CYNH 32	32	1285	857	105	281	110	150	65	± 105	16
CYNH 36	36	1615	1077	115	316	120	165	75	± 117	21
CYNH 40	40	1955	1303	130	351	135	185	80	± 132	30
CYNH 44	44	2350	1567	140	386	145	200	90	± 144	38
CYNH 48	48	2765	1843	150	417	155	210	100	± 155	45
CYNH 52	52	3300	2200	165	447	170	235	105	± 167	62
CYNH 56	56	3900	2600	175	480	180	245	115	± 179	72
CYNH 60	60	4400	2933	190	511	195	270	120	± 190	92
CYNH 64	64	5000	3333	200	541	208	280	130	± 200	105
CYNH 68	68	5550	3700	210	577	218	295	140	± 213	125
CYNH 72	72	6250	4167	225	607	233	315	145	± 225	152
CYNH 76	76	7000	4667	235	637	245	330	155	± 233	170
CYNH 80	80	7700	5133	250	670	260	350	160	± 247	204
CYNH 84	84	8500	5667	260	700	270	365	170	± 257	233
CYNH 88	88	9400	6267	270	730	280	380	180	± 267	262
CYNH 92	92	10200	6800	285	763	297	400	185	± 279	301
CYNH 96	96	11100	7400	295	793	307	420	195	± 289	340
CYNH 100	100	12000	8000	310	825	322	435	200	± 303	391
CYNH 104	104	13000	8667	320	855	332	450	210	± 313	431
CYNH 108	108	14000	9333	335	888	347	470	220	± 322	486
CYNH 112	112	15200	10133	350	920	365	490	225	± 336	551
CYNH 116	116	16150	10767	360	950	375	510	235	± 346	609
CYNH 120	120	17400	11600	370	985	385	520	240	± 361	661
CYNH 124	124	18450	12300	385	1015	405	540	250	± 371	732
CYNH 128	128	19800	13200	395	1045	415	560	260	± 381	802
CYNH 132	132	20900	13933	410	1075	430	580	265	± 393	890
CYNH 136	136	22200	14800	420	1105	440	590	275	± 403	946
CYNH 140	140	23500	15667	435	1135	460	610	280	± 416	1047
CYNH 144	144	24850	16567	445	1165	470	630	290	± 426	1135
CYNH 148	148	26250	17500	455	1195	480	640	300	± 436	1205
CYNH 152	152	27700	18467	470	1225	500	660	305	± 448	1326
CYNH 156	156	29150	19433	485	1255	515	680	315	± 457	1456

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

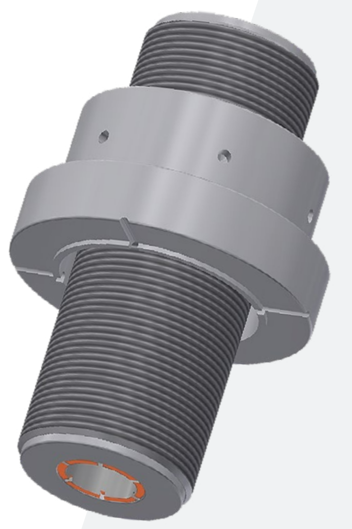
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

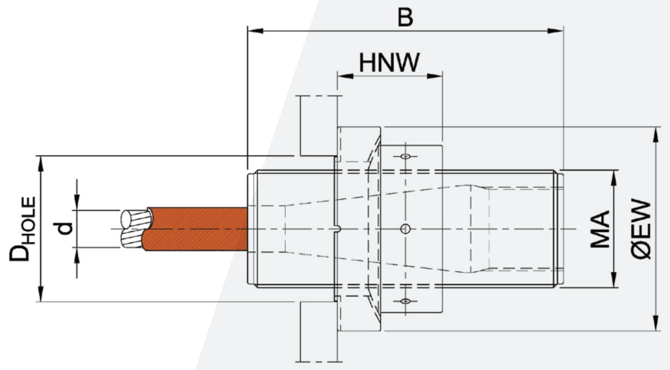
d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
D_{HOLE} Hole Diameter
Adj. Adjustment

HDPE

ADJUSTABLE CYLINDRICAL SOCKET WITH SPHERICAL NUT AND WASHER

CYWH





PRODUCT CODE	d_{max} (mm)	N_{uk} [(1)] (kN)	N_{Rd} [(2)] (kN)	MA (mm)	B (mm)	D_{HOLE} (mm)	HNW (mm)	ØEW (mm)	Adj. (mm)	Mass (kg)
CYWH 12	12	190	127	45	116	57	36	80	± 42	1,6
CYWH 16	16	320	213	55	148	68	47	100	± 53	3,0
CYWH 20	20	490	327	70	181	86	59	120	± 66	5,9
CYWH 24	24	700	467	80	217	99	72	140	± 79	9,3
CYWH 28	28	970	647	90	247	111	86	160	± 89	14
CYWH 32	32	1285	857	105	281	130	95	180	± 103	21
CYWH 36	36	1615	1077	115	316	143	107	200	± 115	27
CYWH 40	40	1955	1303	130	351	161	116	230	± 129	40
CYWH 44	44	2350	1567	140	386	174	125	240	± 142	48
CYWH 48	48	2765	1843	150	417	186	140	260	± 152	58
CYWH 52	52	3300	2200	165	447	205	147	290	± 164	80
CYWH 56	56	3900	2600	175	480	217	163	300	± 176	92
CYWH 60	60	4400	2933	190	511	236	170	330	± 186	119
CYWH 64	64	5000	3333	200	541	248	181	340	± 196	133
CYWH 68	68	5550	3700	210	577	261	195	360	± 209	158
CYWH 72	72	6250	4167	225	607	279	203	380	± 221	190
CYWH 76	76	7000	4667	235	637	292	222	400	± 229	219
CYWH 80	80	7700	5133	250	670	310	226	410	± 243	253
CYWH 84	84	8500	5667	260	700	323	235	420	± 253	282
CYWH 88	88	9400	6267	270	730	336	254	440	± 262	322
CYWH 92	92	10200	6800	285	763	354	268	460	± 274	373
CYWH 96	96	11100	7400	295	793	367	275	490	± 284	426
CYWH 100	100	12000	8000	310	825	385	290	510	± 297	490
CYWH 104	104	13000	8667	320	855	398	299	520	± 307	532
CYWH 108	108	14000	9333	335	888	415	318	550	± 316	611
CYWH 112	112	15200	10133	350	920	434	322	570	± 330	684
CYWH 116	116	16150	10767	360	950	446	329	580	± 340	753
CYWH 120	120	17400	11600	370	985	460	334	590	± 354	787
CYWH 124	124	18450	12300	385	1015	477	353	600	± 364	876
CYWH 128	128	19800	13200	395	1045	490	361	620	± 374	958
CYWH 132	132	20900	13933	410	1075	508	365	640	± 386	1055
CYWH 136	136	22200	14800	420	1105	521	395	650	± 396	1135
CYWH 140	140	23500	15667	435	1135	539	398	680	± 408	1260
CYWH 144	144	24850	16567	445	1165	552	406	700	± 418	1364
CYWH 148	148	26250	17500	455	1195	565	421	710	± 428	1444
CYWH 152	152	27700	18467	470	1225	583	425	730	± 440	1576
CYWH 156	156	29150	19433	485	1255	601	439	750	± 449	1725

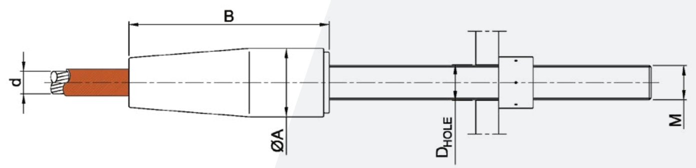
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
D_{HOLE} Hole Diameter
Adj. Adjustment

ADJUSTABLE CYLINDRICAL SOCKET WITH THREADED ROD AND BUSH

CYBH



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	M (mm)	Mass (kg)
CYBH 12	12	160	107	40	123	21,5	20 x 2.5	0,6
CYBH 16	16	280	187	55	158	26	24 x 3	1,5
CYBH 20	20	440	293	65	191	32	30 x 3	2,6
CYBH 24	24	620	413	75	227	38	36 x 3	4,0
CYBH 28	28	850	567	90	257	45	42 x 3	6,6
CYBH 32	32	1150	767	100	291	51	48 x 3	9,1
CYBH 36	36	1400	933	110	326	55	52 x 3	13
CYBH 40	40	1750	1167	120	361	63	60 x 4	16
CYBH 44	44	2100	1400	130	401	67	64 x 4	21
CYBH 48	48	2500	1667	145	432	75	72 x 4	29
CYBH 52	52	2950	1967	155	462	84	80 x 6	35
CYBH 56	56	3400	2267	165	495	89	85 x 6	42
CYBH 60	60	3900	2600	180	526	94	90 x 6	54
CYBH 64	64	4500	3000	190	556	99	95 x 6	64
CYBH 68	68	5000	3333	200	592	109	105 x 6	74
CYBH 72	72	5600	3733	210	627	114	110 x 6	86
CYBH 76	76	6300	4200	225	657	124	120 x 6	103
CYBH 80	80	7000	4667	235	690	130	125 x 6	119
CYBH 84	84	7700	5133	245	720	135	130 x 6	135
CYBH 88	88	8500	5667	260	750	140	135 x 6	160
CYBH 92	92	9300	6200	270	783	145	140 x 6	179
CYBH 96	96	10100	6733	280	813	150	145 x 6	200
CYBH 100	100	10900	7267	295	845	160	155 x 6	231
CYBH 104	104	11800	7867	305	875	165	160 x 6	256
CYBH 108	108	12700	8467	315	908	170	165 x 8	283
CYBH 112	112	13900	9267	325	940	180	175 x 8	309
CYBH 116	116	14900	9933	340	970	185	180 x 8	351
CYBH 120	120	15900	10600	350	1005	190	185 x 8	387
CYBH 124	124	17000	11333	360	1035	195	190 x 8	422
CYBH 128	128	18100	12067	370	1065	215	210 x 8	448
CYBH 132	132	19200	12800	380	1095	225	220 x 10	481
CYBH 136	136	20400	13600	390	1125	235	230 x 10	517
CYBH 140	140	21600	14400	410	1155	235	230 x 10	602
CYBH 144	144	22900	15267	420	1185	245	240 x 10	645
CYBH 148	148	24300	16200	425	1210	250	245 x 10	667
CYBH 152	152	25600	17067	435	1240	255	250 x 10	716
CYBH 156	156	26900	17933	445	1270	260	255 x 10	767

d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
D_{HOLE} Hole Diameter
Mass Mass Without Threaded Rod

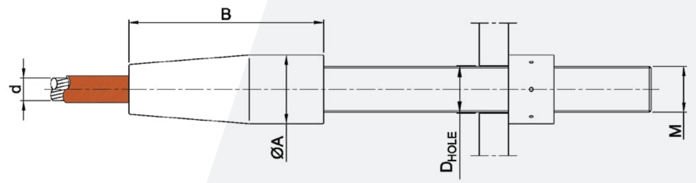
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE CYLINDRICAL SOCKET WITH THREADED ROD

CYMH



PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	M (mm)	Mass (kg)
CYMH 12	12	190	127	40	115	29	27 x 3	0,5
CYMH 16	16	320	213	55	150	38	36 x 3	1,3
CYMH 20	20	490	327	65	189	45	42 x 3	2,3
CYMH 24	24	700	467	75	228	59	50 x 3	3,8
CYMH 28	28	970	647	90	256	59	56 x 4	6,1
CYMH 32	32	1285	857	100	295	67	64 x 4	8,5
CYMH 36	36	1615	1077	110	333	75	72 x 4	12
CYMH 40	40	1955	1303	120	376	84	80 x 4	16
CYMH 44	44	2350	1567	130	419	94	90 x 6	19
CYMH 48	48	2765	1843	145	453	104	100 x 6	27
CYMH 52	52	3300	2200	155	486	109	105 x 6	33
CYMH 56	56	3900	2600	165	527	119	115 x 6	40
CYMH 60	60	4400	2933	180	561	124	120 x 6	53
CYMH 64	64	5000	3333	190	594	135	130 x 6	62
CYMH 68	68	5550	3700	200	628	140	135 x 6	73
CYMH 72	72	6250	4167	210	666	145	140 x 6	86
CYMH 76	76	7000	4667	225	699	155	150 x 6	104
CYMH 80	80	7700	5133	235	735	165	160 x 6	118
CYMH 84	84	8500	5667	245	788	170	165 x 6	139
CYMH 88	88	9400	6267	260	821	180	175 x 6	163
CYMH 92	92	10200	6800	270	857	190	185 x 8	181
CYMH 96	96	11100	7400	280	890	195	190 x 8	203
CYMH 100	100	12000	8000	295	925	205	200 x 8	236
CYMH 104	104	13000	8667	305	958	210	205 x 8	264
CYMH 108	108	14000	9333	315	994	215	210 x 8	292
CYMH 112	112	15200	10133	325	1029	225	220 x 8	318
CYMH 116	116	16150	10767	340	1062	235	230 x 8	360
CYMH 120	120	17400	11600	350	1100	245	240 x 8	393
CYMH 124	124	18450	12300	360	1133	250	245 x 8	431
CYMH 128	128	19800	13200	370	1166	261	255 x 8	463
CYMH 132	132	20900	13933	380	1199	266	260 x 8	504
CYMH 136	136	22200	14800	390	1232	276	270 x 8	540
CYMH 140	140	23500	15667	410	1270	286	280 x 10	626
CYMH 144	144	24850	16567	420	1303	291	285 x 10	678
CYMH 148	148	26250	17500	430	1336	297	290 x 10	730
CYMH 152	152	27700	18467	445	1369	307	300 x 10	802
CYMH 156	156	29150	19433	455	1402	317	310 x 10	852

d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
D_{HOLE} Hole Diameter
Mass Mass Without Threaded Rod

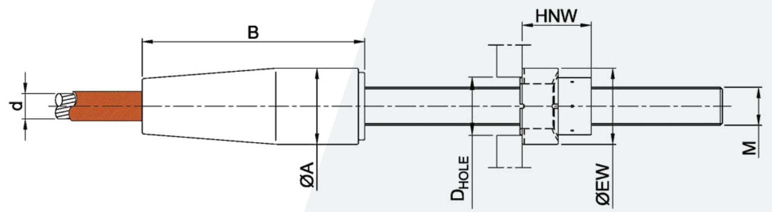
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE CYLINDRICAL SOCKET WITH THREADED ROD, BUSH, SPHERICAL NUT AND WASHER

CYRH



d_{max}	Max Strand Diameter
N_{uk}	Characteristic Breaking Strength
N_{Rd}	Design Resistance
D_{HOLE}	Hole Diameter
Mass	Mass Without Threaded Rod

PRODUCT CODE	d_{max} (mm)	N_{uk} [(1)] (kN)	N_{Rd} [(2)] (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	ØEW (mm)	HNW (mm)	M (mm)	Mass (kg)
CYRH 12	12	160	107	40	123	31	40	39	20 x 2.5	0,7
CYRH 16	16	280	187	55	158	38	50	48	24 x 3	1,8
CYRH 20	20	440	293	65	191	46	60	53	30 x 3	2,9
CYRH 24	24	620	413	75	227	55	80	63	36 x 3	4,9
CYRH 28	28	850	567	90	257	65	90	78	42 x 3	8,1
CYRH 32	32	1150	767	100	291	74	100	88	48 x 3	11
CYRH 36	36	1400	933	110	326	81	110	95	52 x 3	15
CYRH 40	40	1750	1167	120	361	92	120	108	60 x 4	20
CYRH 44	44	2100	1400	130	401	99	130	117	64 x 4	26
CYRH 48	48	2500	1667	145	432	111	150	128	72 x 4	35
CYRH 52	52	2950	1967	155	462	122	170	141	80 x 6	43
CYRH 56	56	3400	2267	165	495	130	170	156	85 x 6	51
CYRH 60	60	3900	2600	180	526	138	180	163	90 x 6	65
CYRH 64	64	4500	3000	190	556	146	190	177	95 x 6	78
CYRH 68	68	5000	3333	200	592	160	210	186	105 x 6	91
CYRH 72	72	5600	3733	210	627	168	220	202	110 x 6	106
CYRH 76	76	6300	4200	225	657	181	240	210	120 x 6	128
CYRH 80	80	7000	4667	235	690	189	250	224	125 x 6	148
CYRH 84	84	7700	5133	245	720	197	260	229	130 x 6	167
CYRH 88	88	8500	5667	260	750	206	270	242	135 x 6	197
CYRH 92	92	9300	6200	270	783	213	280	247	140 x 6	219
CYRH 96	96	10100	6733	280	813	222	290	261	145 x 6	246
CYRH 100	100	10900	7267	295	845	235	310	270	155 x 6	284
CYRH 104	104	11800	7867	305	875	243	320	285	160 x 6	317
CYRH 108	108	12700	8467	315	908	251	330	298	165 x 8	352
CYRH 112	112	13900	9267	325	940	265	350	307	175 x 8	386
CYRH 116	116	14900	9933	340	970	273	360	323	180 x 8	438
CYRH 120	120	15900	10600	350	1005	281	370	327	185 x 8	478
CYRH 124	124	17000	11333	360	1035	289	380	342	190 x 8	524
CYRH 128	128	18100	12067	370	1065	314	410	358	210 x 8	565
CYRH 132	132	19200	12800	380	1095	327	430	367	220 x 10	611
CYRH 136	136	20400	13600	390	1125	340	450	376	230 x 10	660
CYRH 140	140	21600	14400	410	1155	343	450	386	230 x 10	752
CYRH 144	144	22900	15267	420	1185	356	470	395	240 x 10	809
CYRH 148	148	24300	16200	425	1210	364	480	409	245 x 10	848
CYRH 152	152	25600	17067	435	1240	372	490	414	250 x 10	904
CYRH 156	156	26900	17933	445	1270	380	500	429	255 x 10	973

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

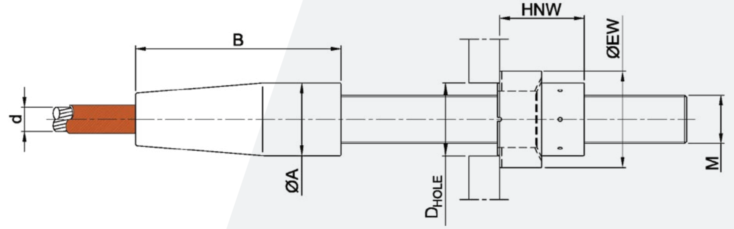
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HDPE

ADJUSTABLE CYLINDRICAL SOCKET WITH THREADED ROD, SPHERICAL NUT AND WASHER

CYVH



d_{max}	Max Strand Diameter
N_{uk}	Characteristic Breaking Strength
N_{Rd}	Design Resistance
D_{HOLE}	Hole Diameter
Mass	Mass Without Threaded Rod

PRODUCT CODE	d_{max} (mm)	N_{uk} [(1)] (kN)	N_{Rd} [(2)] (kN)	ØA (mm)	B (mm)	D_{HOLE} (mm)	ØEW (mm)	HNW (mm)	M (mm)	Mass (kg)
CYVH 12	12	190	127	40	115	38	60	45	27 x 3	0,8
CYVH 16	16	320	213	55	150	51	80	58	36 x 3	2,0
CYVH 20	20	490	327	65	189	60	90	63	42 x 3	3,3
CYVH 24	24	700	467	75	228	78	120	81	50 x 3	5,8
CYVH 28	28	970	647	90	256	80	120	91	56 x 4	8,7
CYVH 32	32	1285	857	100	295	92	130	104	64 x 4	12
CYVH 36	36	1615	1077	110	333	103	140	113	72 x 4	15
CYVH 40	40	1955	1303	120	376	114	150	126	80 x 4	20
CYVH 44	44	2350	1567	130	419	128	190	138	90 x 6	29
CYVH 48	48	2765	1843	145	453	141	210	152	100 x 6	39
CYVH 52	52	3300	2200	155	486	150	230	161	105 x 6	50
CYVH 56	56	3900	2600	165	527	163	250	180	115 x 6	62
CYVH 60	60	4400	2933	180	561	171	240	190	120 x 6	73
CYVH 64	64	5000	3333	190	594	185	260	209	130 x 6	88
CYVH 68	68	5550	3700	200	628	193	270	212	135 x 6	101
CYVH 72	72	6250	4167	210	666	201	280	227	140 x 6	120
CYVH 76	76	7000	4667	225	699	214	300	236	150 x 6	142
CYVH 80	80	7700	5133	235	735	229	320	255	160 x 6	166
CYVH 84	84	8500	5667	245	788	236	330	258	165 x 6	191
CYVH 88	88	9400	6267	260	821	250	350	277	175 x 6	226
CYVH 92	92	10200	6800	270	857	263	370	287	185 x 8	252
CYVH 96	96	11100	7400	280	890	272	380	302	190 x 8	284
CYVH 100	100	12000	8000	295	925	285	390	310	200 x 8	319
CYVH 104	104	13000	8667	305	958	293	410	323	205 x 8	364
CYVH 108	108	14000	9333	315	994	302	410	338	210 x 8	397
CYVH 112	112	15200	10133	325	1029	315	430	347	220 x 8	434
CYVH 116	116	16150	10767	340	1062	329	450	366	230 x 8	495
CYVH 120	120	17400	11600	350	1100	342	470	375	240 x 8	540
CYVH 124	124	18450	12300	360	1133	350	490	389	245 x 8	604
CYVH 128	128	19800	13200	370	1166	363	510	399	255 x 8	651
CYVH 132	132	20900	13933	380	1199	371	510	404	260 x 8	688
CYVH 136	136	22200	14800	390	1232	384	530	411	270 x 8	741
CYVH 140	140	23500	15667	410	1270	398	550	430	280 x 10	854
CYVH 144	144	24850	16567	420	1303	406	560	434	285 x 10	914
CYVH 148	148	26250	17500	430	1336	414	570	449	290 x 10	987
CYVH 152	152	27700	18467	445	1369	427	590	458	300 x 10	1078
CYVH 156	156	29150	19433	455	1402	441	610	477	310 x 10	1162

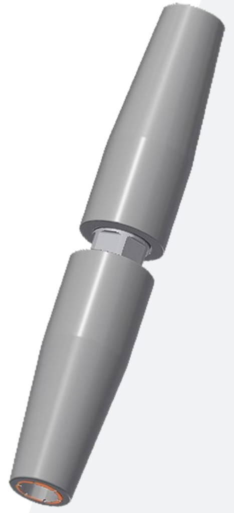
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

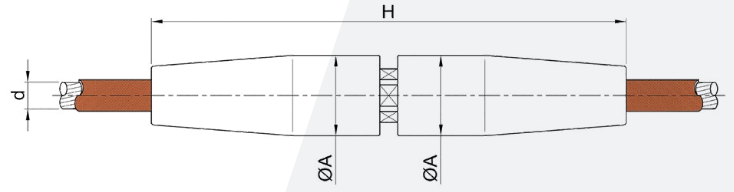
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

CYLINDRICAL SOCKET WITH COUPLER

CYCH





PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	H (mm)	Mass (kg)
CYCH 12	12	190	127	40	248	1,2
CYCH 16	16	320	213	55	320	3,3
CYCH 20	20	490	327	65	392	5,7
CYCH 24	24	700	467	75	475	9,5
CYCH 28	28	970	647	90	536	15
CYCH 32	32	1285	857	100	616	21
CYCH 36	36	1615	1077	110	696	29
CYCH 40	40	1955	1303	120	757	39
CYCH 44	44	2350	1567	130	868	50
CYCH 48	48	2765	1843	145	936	70
CYCH 52	52	3300	2200	155	1002	85
CYCH 56	56	3900	2600	165	1094	106
CYCH 60	60	4400	2933	180	1162	135
CYCH 64	64	5000	3333	190	1228	160
CYCH 68	68	5550	3700	200	1306	186
CYCH 72	72	6250	4167	210	1392	220
CYCH 76	76	7000	4667	225	1458	265
CYCH 80	80	7700	5133	235	1540	305
CYCH 84	84	8500	5667	245	1646	362
CYCH 88	88	9400	6267	260	1722	426
CYCH 92	92	10200	6800	270	1814	481
CYCH 96	96	11100	7400	280	1880	535
CYCH 100	100	12000	8000	295	1950	619
CYCH 104	104	13000	8667	305	2016	686
CYCH 108	108	14000	9333	315	2088	757
CYCH 112	112	15200	10133	325	2158	831
CYCH 116	116	16150	10767	340	2224	938
CYCH 120	120	17400	11600	350	2300	1029
CYCH 124	124	18450	12300	360	2386	1129
CYCH 128	128	19800	13200	370	2452	1224
CYCH 132	132	20900	13933	380	2518	1324
CYCH 136	136	22200	14800	390	2584	1430
CYCH 140	140	23500	15667	410	2665	1639
CYCH 144	144	24850	16567	420	2731	1765
CYCH 148	148	26250	17500	430	2797	1893
CYCH 152	152	27700	18467	445	2863	2077
CYCH 156	156	29150	19433	455	2929	2219

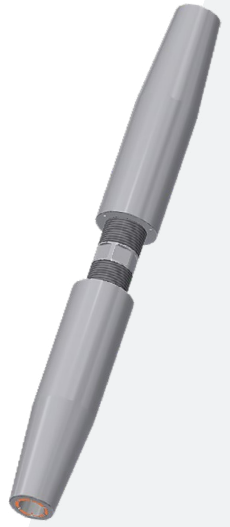
d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
D_{HOLE} Hole Diameter

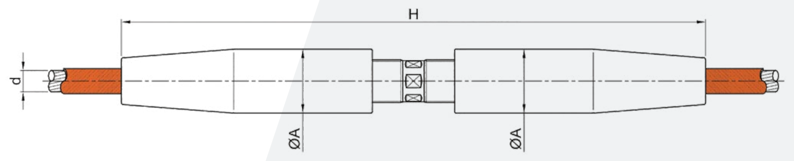
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE CYLINDRICAL SOCKET WITH COUPLER

CYAH





PRODUCT CODE	d_{max} (mm)	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	ØA (mm)	H (mm)	Adj. (mm)	Mass (kg)
CYAH 12	12	190	127	40	358	± 30	1,7
CYAH 16	16	320	213	55	448	± 40	4,7
CYAH 20	20	490	327	65	548	± 50	8,1
CYAH 24	24	700	467	75	678	± 65	14
CYAH 28	28	970	647	90	763	± 75	21
CYAH 32	32	1285	857	100	890	± 90	30
CYAH 36	36	1615	1077	110	1002	± 100	42
CYAH 40	40	1955	1303	120	1075	± 110	54
CYAH 44	44	2350	1567	130	1222	± 120	70
CYAH 48	48	2765	1843	145	1332	± 130	99
CYAH 52	52	3300	2200	155	1440	± 140	119
CYAH 56	56	3900	2600	165	1544	± 150	146
CYAH 60	60	4400	2933	180	1624	± 160	188
CYAH 64	64	5000	3333	190	1762	± 180	227
CYAH 68	68	5550	3700	200	1892	± 200	269
CYAH 72	72	6250	4167	210	1990	± 200	310
CYAH 76	76	7000	4667	225	2068	± 200	372
CYAH 80	80	7700	5133	235	2162	± 200	423
CYAH 84	84	8500	5667	245	2250	± 200	485
CYAH 88	88	9400	6267	260	2328	± 200	568
CYAH 92	92	10200	6800	270	2456	± 200	640
CYAH 96	96	11100	7400	280	2534	± 200	710
CYAH 100	100	12000	8000	295	2606	± 200	815
CYAH 104	104	13000	8667	305	2684	± 200	899
CYAH 108	108	14000	9333	315	2758	± 200	983
CYAH 112	112	15200	10133	325	2820	± 200	1069
CYAH 116	116	16150	10767	340	2878	± 200	1198
CYAH 120	120	17400	11600	350	2946	± 200	1300
CYAH 124	124	18450	12300	360	3034	± 200	1415
CYAH 128	128	19800	13200	370	3102	± 210	1529
CYAH 132	132	20900	13933	380	3158	± 210	1641
CYAH 136	136	22200	14800	390	3212	± 210	1759
CYAH 140	140	23500	15667	410	3285	± 210	1984
CYAH 144	144	24850	16567	420	3339	± 210	2118
CYAH 148	148	26250	17500	430	3373	± 210	2278
CYAH 152	152	27700	18467	445	3437	± 210	2505
CYAH 156	156	29150	19433	455	3501	± 210	2681

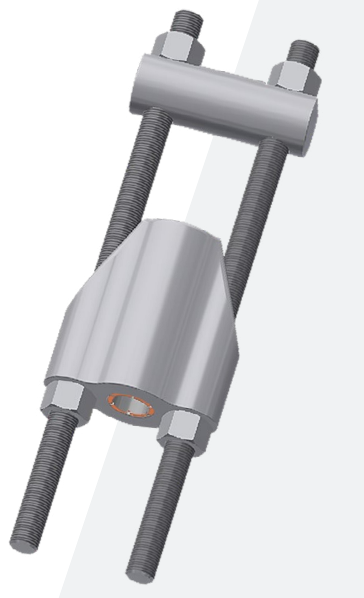
d_{max} Max Strand Diameter
N_{uk} Characteristic Breaking Strength
N_{Rd} Design Resistance
D_{HOLE} Hole Diameter
Adj. Adjustment

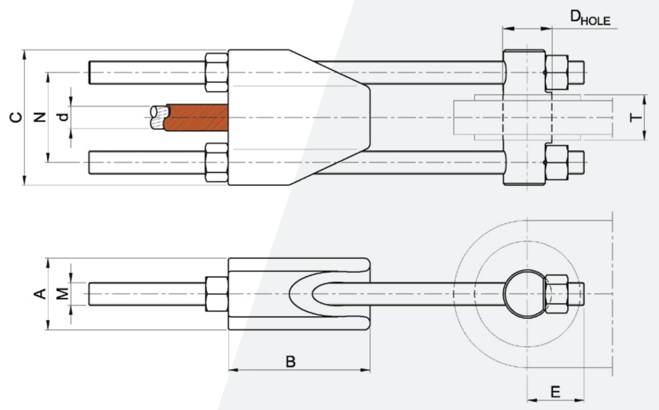
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE BRIDGE SOCKET

BRCH





d_{max}	Max Strand Diameter
N_{uk}	Characteristic Breaking Strength
N_{Rd}	Design Resistance
D_{HOLE}	Hole Diameter
Adj.	Adjustment

PRODUCT CODE	d_{max} (mm)	N_{uk} [(1)] (kN)	N_{Rd} [(2)] (kN)	A (mm)	B (mm)	C (mm)	D_{HOLE} (mm)	E (mm)	M (mm)	N (mm)	T_{min} (mm)	T_{max} (mm)	Adj. (mm)	Mass (kg)
BRCH 12	12	160	107	40	82	80	32	37	16 x 2	56	16	22	± 150	3,7
BRCH 16	16	280	187	55	106	104	38	45	20 x 3	72	24	30	± 150	7,4
BRCH 20	20	440	293	65	131	126	47	55	24 x 3	86	30	37	± 150	12
BRCH 24	24	620	413	80	159	150	56	65	27 x 3	102	38	45	± 150	19
BRCH 28	28	850	567	90	181	174	66	78	33 x 4	118	50	56	± 150	29
BRCH 32	32	1150	767	105	207	198	72	85	36 x 3	134	55	60	± 200	41
BRCH 36	36	1400	933	120	229	220	80	94	39 x 3	148	65	70	± 200	53
BRCH 40	40	1750	1167	130	256	242	91	104	42 x 3	162	70	75	± 200	75
BRCH 44	44	2100	1400	140	283	268	97	114	48 x 3	180	80	85	± 200	98
BRCH 48	48	2500	1667	150	306	292	107	125	52 x 3	196	90	95	± 200	121
BRCH 52	52	2950	1967	170	328	316	117	136	56 x 4	212	95	105	± 200	148
BRCH 56	56	3400	2267	180	353	338	122	144	60 x 4	226	105	110	± 200	175
BRCH 60	60	3900	2600	190	376	358	131	150	60 x 4	238	115	120	± 200	194
BRCH 64	64	4500	3000	200	398	384	141	165	68 x 4	256	125	130	± 250	242
BRCH 68	68	5000	3333	220	426	408	151	176	72 x 4	272	130	135	± 250	290
BRCH 72	72	5600	3733	230	448	434	157	184	76 x 4	290	140	145	± 250	332
BRCH 76	76	6300	4200	240	470	456	171	198	80 x 4	304	150	155	± 250	383
BRCH 80	80	7000	4667	250	495	480	182	210	85 x 4	320	155	165	± 250	524
BRCH 84	84	7700	5133	270	517	504	191	221	90 x 6	336	165	170	± 250	592
BRCH 88	88	8500	5667	280	539	530	202	233	95 x 6	354	175	180	± 250	672
BRCH 92	92	9300	6200	290	564	560	212	251	105 x 6	376	185	190	± 250	799
BRCH 96	96	10100	6733	300	586	584	222	263	110 x 6	392	190	200	± 250	893
BRCH 100	100	10900	7267	310	610	608	232	274	115 x 6	408	195	205	± 300	994
BRCH 104	104	11800	7867	330	632	632	242	286	120 x 6	424	205	215	± 300	1113
BRCH 108	108	12700	8467	340	657	652	252	293	120 x 6	436	210	225	± 300	1182
BRCH 112	112	13900	9267	350	681	682	272	317	130 x 6	458	215	230	± 300	1376
BRCH 116	116	14900	9933	360	703	702	282	324	130 x 6	470	225	240	± 300	1454
BRCH 120	120	15900	10600	380	730	726	292	336	135 x 6	486	230	250	± 300	1612
BRCH 124	124	17000	11333	390	752	750	303	348	140 x 6	502	240	255	± 300	1756
BRCH 128	128	18100	12067	400	774	774	313	360	145 x 6	518	250	265	± 300	1909
BRCH 132	132	19200	12800	410	796	800	323	372	150 x 6	536	255	270	± 300	2074
BRCH 136	136	20400	13600	430	818	830	333	389	160 x 6	558	265	280	± 300	2331
BRCH 140	140	21600	14400	440	840	858	343	406	170 x 6	578	270	290	± 300	2583
BRCH 144	144	22900	15267	450	862	890	353	423	180 x 6	602	280	300	± 300	2857
BRCH 148	148	24300	16200	460	884	914	363	435	185 x 6	618	290	310	± 300	3061
BRCH 152	152	25600	17067	480	906	938	373	446	190 x 6	634	300	320	± 300	3301
BRCH 156	156	26900	17933	490	928	962	383	458	195 x 6	650	310	330	± 300	3525

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HDPE TECHNICAL SHEET

High Density Polyethylene (HDPE) Coated Cables
For increasing long-term durability or high visibility OSS and FLC cables can be additionally protected with a vacuum extruded HDPE covering.

The HDPE is applied by a continuous extrusion process and is closely monitored under factory-controlled conditions.

This external plastic coating provides an additional corrosion protection stage on outer surface of the cables, assuring optimum durability for cables even in very aggressive environments.

This option also allows clients to benefit from more aesthetic choices in their cable selection with a large spectrum of RAL colours available extruded, co-extruded over a carbon black foundation HDPE layer, or a double coloured layer.

Additionally, it is also possible to extrude an axial line mark along the length of the cable.

HDPE MINIMUM REQUIRED CHARACTERISTICS		
TENSILE STRAIN AT BREAK	TENSILE STRENGTH	ESCR
Min. 400 %	Min. 19 MPa	Min. 1000 h

HDPE relevant properties:

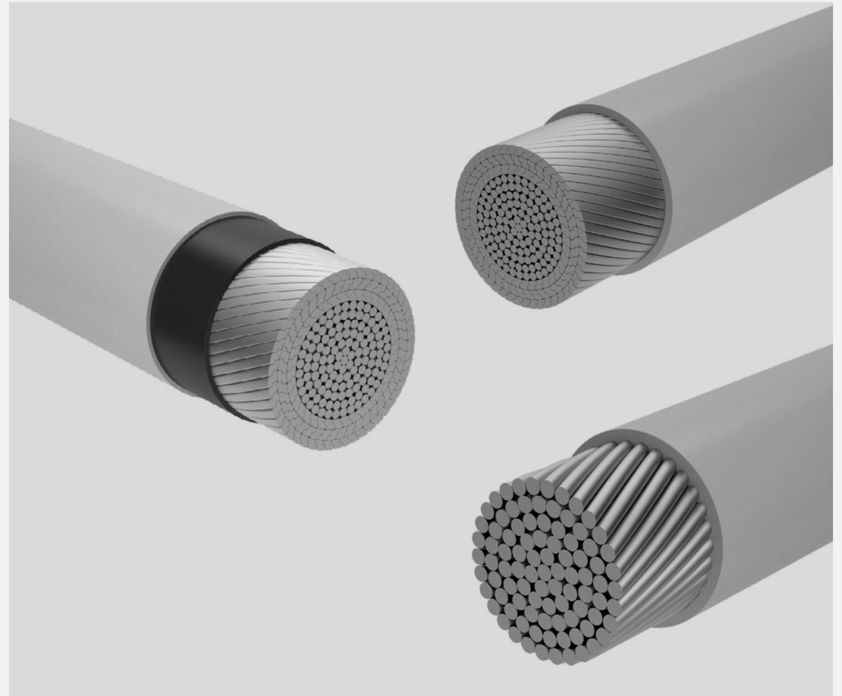
- Very low maintenance needed during the cable lifetime.
- UV stability against solar radiation.
- Weathering resistance.
- Full spectrum of outer layer final RAL colours.
- Typical HDPE wall thickness is 10% of the internal strand diameter.
- Cables are capable of being coiled on a diameter of 30 times cable diameter.

A critical area for HDPE sheathed cables is the interface at the socket neck. Teufelberger-Redaelli has engineered a technical solution to prevent water getting into the socket. The socket has been specially designed to create a water-tight joint which seals the entrance of the cable. This joint is suitable for all the sizes of sockets.

The water-tight joint offers several benefits:

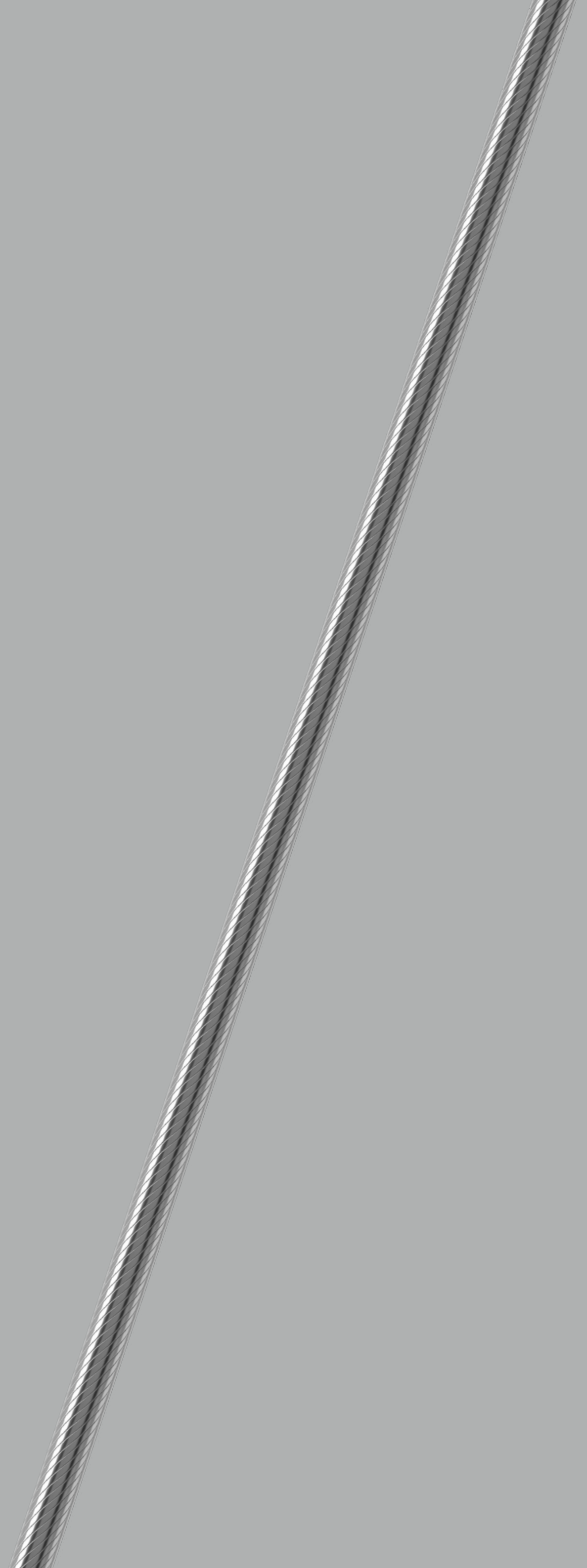
- Connection between HDPE cover, cable and socket is secured from risk of water ingress.
- There is a mechanical locking mechanism on to the cable, ensuring firm fixing of the HDPE.
- No significant change from the original socket's geometry and primary steel connection dimensions.

Socketing option in this application is restricted to polyester resin for structural applications with minimum 100% efficiency to the strand minimum breaking force. In accordance with EN 13411-4 resin is recommended for HDPE sheathed cables instead of zinc / zinc alloy socketing due to the high temperatures involved with that process which can melt and damage the polyethylene.



SOCKETS

	MATERIAL	CORROSION PROTECTION	NDT EXAMINATION
Fix Fork Socket TTF Adjustable Fork Socket TBF Socket Body for Bridge Socket BRC	High strength steel casting G24 Mn6 (EN 10340), BT1 (BS 3100) or G18 NiMoCr3-6 (EN 10340) quenched and tempered	Hot dip galvanising with minimum 85 µm thickness (EN 1461)	• Ultrasonic Test (EN 12680-1) • Magnetoscopic Test (EN 1369) • Visual Inspection (EN 1370) • Dimensional Control (ISO 8062-3) • Radiographic Examination (EN 12681) upon request
Socket body for TBF Cylindrical sockets type CYF, CYS, CYT, CYN, CYW, CYB, CYR, CYV, CYM, CYC and CYA Pin for TTF socket, TBF socket Pin for BRC socket Pin for MAC, MAC-R, TBC, MCC swaged socket Bush for CYB, CYR Nuts for CYT, CYN, CYW	High strength alloy steel CrNiMo (EN ISO 683), rolled or forged, quenched and tempered.	Hot dip galvanising with minimum 85 µm thickness (EN 1461)	• Ultrasonic Test (EN 10308) • Dimensional Control (EN 22768-2 for machining, ISO 965-1 for threads)
Threaded rods and nuts for sockets type CYB, CYR, CYV, CYM and BRC Coupler for sockets type TBF, CYC and CYA	High strength alloy steel 42CrMo4 (EN ISO 683), B7 (ASTM A193) or 2H (ASTM A194)	Hot dip galvanising with bright threads/ Geomet	• Ultrasonic Test (EN 10308) • Magnetoscopic Test (EN 10228-1) only on nuts • Visual Examination • Dimensional Control (EN 22768-2 for machining, ISO 965-1 for threads)
Lock plates for TTF/TBF socket pin Washers for CYW, CYR, CYV	S355J2 (EN 10025)	Hot dip galvanising with minimum 85 µm thickness (EN 1461)	
Swaged Sockets type MAC, MAC-R, MCC, TBC and FLT	42CrMo4 (EN ISO 683) or S355J2 (EN 10025)	Hot dip galvanising (centrifuged) with minimum 55 µm thickness (EN 1461)	• Ultrasonic Test (EN 10308) • Visual and Dimensional Inspection



STAINLESS STEEL CABLE SYSTEM

TECHNICAL PRODUCT DATA

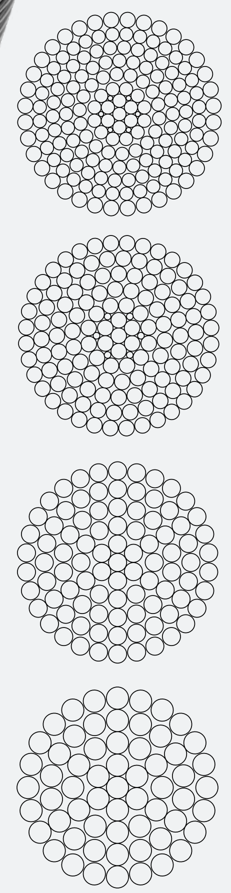
STAINLESS STEEL CABLE SYSTEM

Stainless steel cable systems can be supplied up to 42mm diameter. with swaged sockets and larger diameters with stainless steel spelter sockets. Generally stainless steel cables are selected in applications where the cable system is highly visible or as an architectural feature for example transparent facades, glass curtain wall facades, exhibitions and convention centre halls, pavilions, footbridges and cable net roofs. Stainless steel cables can be supplied with a polished finish.

Stainless steel cables are available as Full Locked Coil (type FLX) or Open Spiral Strand (type OSX).

FLX ropes are manufactured using outer layers interlocking Z-shaped stainless steel wires around a core of stainless steel round wires. OSX strands are manufactured using layers of helically wound stainless steel round wires around a central core. The standard stainless steel grade used to produce OSX and FLX is 1.4401 (AISI 316). Each wire has a minimum tensile strength of 1470 N/mm². Stainless steel cables do not need for an internal corrosion inhibitor compound. Therefore they are usually produced dry or with a light manufacturing oil. Each individual stainless steel is tested and verified for physical properties including tensile strength, bending and ductility in accordance with EN 10264-4. Customised stainless steel casted sockets are also available to suit customer project specific requirements and specifications.

OSX



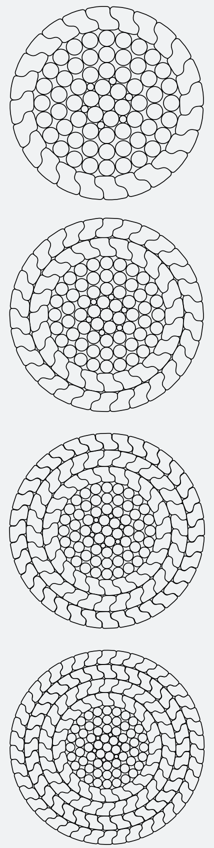
PRODUCT CODE	d (mm)	F_{uk} (1) (kN)	F_{Rd} (2) (kN)	A (mm²)	EA (MN)	Mass (kg/m)
OSX 8	8	55	33	39	5	0,3
OSX 10	10	85	52	61	8	0,5
OSX 12	12	120	73	88	11	0,7
OSX 14	14	165	100	120	16	1,0
OSX 16	16	220	133	157	20	1,3
OSX 18	18	280	170	199	26	1,7
OSX 20	20	345	209	245	32	2,1
OSX 22	22	415	252	297	39	2,5
OSX 24	24	495	300	353	46	3,0
OSX 26	26	585	355	414	54	3,5
OSX 28	28	675	409	480	62	4,0
OSX 30	30	775	470	552	72	4,6
OSX 32	32	885	536	628	82	5,3
OSX 34	34	1000	606	708	92	5,9
OSX 36	36	1120	679	794	103	6,7
OSX 38	38	1250	758	885	115	7,4
OSX 40	40	1385	839	981	127	8,2
OSX 44	44	1675	1015	1186	154	9,9
OSX 48	48	1930	1170	1412	184	11,8
OSX 52	52	2255	1367	1657	215	13,9
OSX 56	56	2605	1579	1922	250	16,1
OSX 60	60	2980	1806	2206	287	18,5
OSX 64	64	3385	2052	2510	326	21,0
OSX 68	68	3810	2309	2834	368	23,7
OSX 72	72	4265	2585	3177	413	26,6
OSX 76	76	4745	2876	3540	460	29,7
OSX 80	80	5250	3182	3922	510	32,9

d	Nominal Diameter
F_{uk}	Characteristic Breaking Strength
F_{Rd}	Design Resistance
A	Metallic Cross Section
EA	Elastic Stiffness

(1) Characteristic Breaking Strength F_{uk} = Minimum Breaking Force F_{min} x Loss Factor ke (ke = 1) where ke = 1 for metal/resin filled socket, ke = 0.9 for swaged socket
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we can propose alternative cable diameters and cable characteristics.

STAINLESS STEEL

FLX



PRODUCT CODE	d (mm)	F_{uk} (1) (kN)	F_{Rd} (2) (kN)	A (mm^2)	EA (MN)	Mass (kg/m)
FLX 14	14	180	120	130	17	1,1
FLX 16	16	235	157	170	22	1,4
FLX 18	18	295	197	215	28	1,8
FLX 20	20	365	243	266	35	2,2
FLX 22	22	445	297	322	42	2,7
FLX 24	24	530	353	383	50	3,2
FLX 26	26	620	413	450	58	3,8
FLX 28	28	720	480	521	68	4,4
FLX 30	30	825	550	598	78	5,1
FLX 32	32	940	627	681	89	5,8
FLX 34	34	1065	710	769	100	6,5
FLX 36	36	1190	793	862	112	7,3
FLX 38	38	1330	887	960	125	8,1
FLX 40	40	1450	967	1077	140	9,1
FLX 44	44	1745	1163	1303	169	11,0
FLX 48	48	2065	1377	1551	202	13,1
FLX 52	52	2400	1600	1841	239	15,6
FLX 56	56	2765	1843	2136	278	18,1
FLX 60	60	3155	2103	2452	319	20,7
FLX 64	64	3570	2380	2789	363	23,6
FLX 68	68	4015	2677	3149	409	26,6
FLX 72	72	4485	2990	3530	459	29,9
FLX 76	76	4980	3320	3933	511	33,3
FLX 80	80	5505	3670	4358	567	36,9

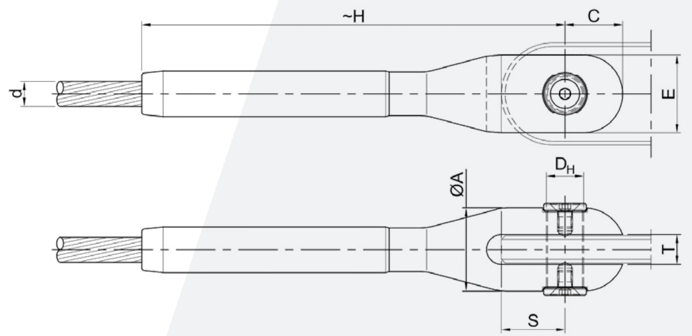
- d — Nominal Diameter
- F_{uk} — Characteristic Breaking Strength
- F_{Rd} — Design Resistance
- A — Metallic Cross Section
- EA — Elastic Stiffness

(1) Characteristic Breaking Strength F_{uk} = Minimum Breaking Force F_{min} x Loss Factor ke (ke = 1) where ke = 1 for metal/resin filled socket, ke = 0.9 for swaged socket
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can propose alternative cable diameters and cable characteristics.

MAC

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	DH (mm)	S (mm)	T (mm)
MAC 6	30	18	6	26	105	18	24	11	17	8
MAC 8	55	33	8	33	139	22	31	14	22	10
MAC 10	85	51	10	37	166	25	34	16	25	12
MAC 12	120	72	12	45	200	30	42	19	30	15
MAC 14	165	99	14	49	230	33	46	21	35	15
MAC 16	220	132	16	58	265	40	54	25	41	18
MAC 18	280	168	18	65	297	44	60	28	44	22
MAC 20	345	207	20	71	330	49	67	31	51	22
MAC 22	415	249	22	78	362	54	73	34	55	25
MAC 24	495	297	24	82	393	57	77	36	60	25
MAC 26	585	351	26	86	423	60	82	38	66	25
MAC 28	675	405	28	94	455	65	88	41	69	30
MAC 30	775	465	30	100	488	69	95	44	75	30
MAC 32	885	531	32	106	519	74	100	47	80	32
MAC 34	1000	600	34	114	554	79	108	50	84	35
MAC 36	1120	672	36	119	583	82	112	52	88	37
MAC 38	1250	750	38	125	614	86	118	54	91	40
MAC 40	1385	831	40	131	647	91	124	57	98	40
MAC 42	1530	918	42	136	676	94	129	59	102	42



- d_{max} — Max Strand Diameter
- N_{uk} — Characteristic Breaking Strength
- N_{Rd} — Design Resistance

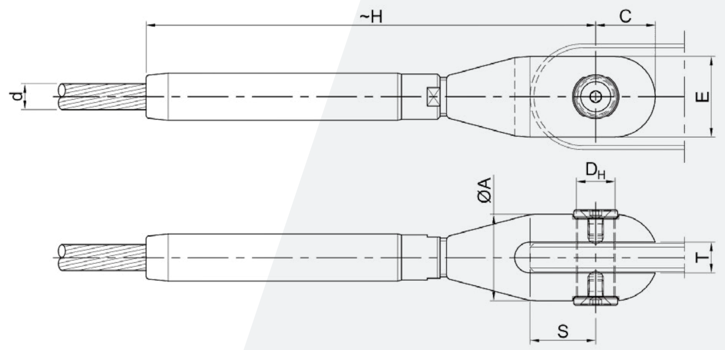
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

ADJUSTABLE OPEN SWAGED SOCKET
X2CrNiMoN22-5-3

MAC-R

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	DH (mm)	S (mm)	T (mm)	Adj. (mm)
MAC-R 6	30	18	6	26	114	18	24	11	17	8	± 3
MAC-R 8	55	33	8	33	151	22	31	14	22	10	± 4
MAC-R 10	85	51	10	37	181	25	34	16	25	12	± 5
MAC-R 12	120	72	12	45	218	30	42	19	30	15	± 6
MAC-R 14	165	99	14	49	251	33	46	21	35	15	± 7
MAC-R 16	220	132	16	58	289	40	54	25	41	18	± 8
MAC-R 18	280	168	18	65	324	44	60	28	44	22	± 9
MAC-R 20	345	207	20	71	360	49	67	31	51	22	± 10
MAC-R 22	415	249	22	78	395	54	73	34	55	25	± 11
MAC-R 24	495	297	24	82	429	57	77	36	60	25	± 12
MAC-R 26	585	351	26	86	462	60	82	38	66	25	± 13
MAC-R 28	675	405	28	94	497	65	88	41	69	30	± 14
MAC-R 30	775	465	30	100	533	69	95	44	75	30	± 15
MAC-R 32	885	531	32	106	567	74	100	47	80	32	± 16
MAC-R 34	1000	600	34	114	605	79	108	50	84	35	± 17
MAC-R 36	1120	672	36	119	637	82	112	52	88	37	± 18
MAC-R 38	1250	750	38	125	671	86	118	54	91	40	± 19
MAC-R 40	1385	831	40	131	707	91	124	57	98	40	± 20
MAC-R 42	1530	918	42	136	739	94	129	59	102	42	± 21



- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- Adj. Adjustment

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

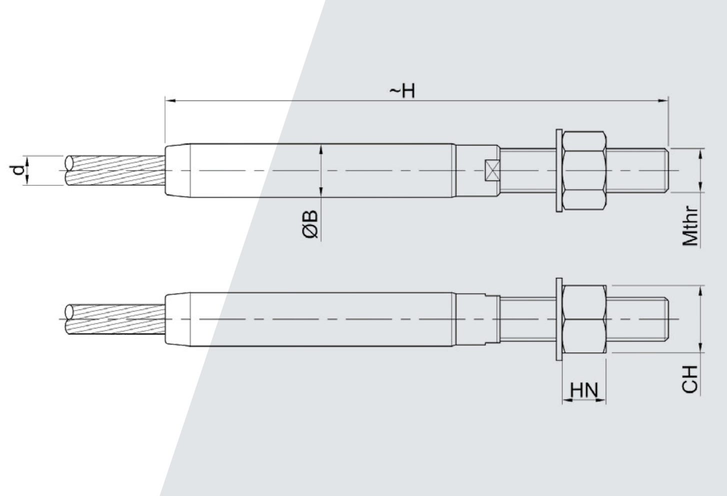
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

STAINLESS STEEL

SWAGED FITTING
X2CrNiMoN22-5-3

FLT

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØB (mm)	~H (mm)	Mthr (mm)	Pitch (mm)	Lthr (mm)	CH (mm)	HN (mm)
FLT 6	30	18	6	12	105	10	1,5	40	16	10
FLT 8	55	33	8	15	140	14	2	53	21	14
FLT 10	85	51	10	18	170	16	2	62	24	16
FLT 12	120	72	12	23	205	20	2,5	75	30	20
FLT 14	165	99	14	30	239	24	3	88	36	24
FLT 16	220	132	16	30	272	27	3	99	41	27
FLT 18	280	168	18	37	303	30	3,5	109	46	30
FLT 20	345	207	20	37	335	33	3,5	119	50	33
FLT 22	415	249	22	40	372	36	3	135	55	36
FLT 24	495	297	24	47	399	36	3	140	55	36
FLT 26	585	351	26	47	436	42	3	156	65	42
FLT 28	675	405	28	53	463	42	3	161	65	42
FLT 30	775	465	30	61	495	45	3	172	70	45
FLT 32	885	531	32	61	526	48	3	181	75	48
FLT 34	1000	600	34	67	561	52	3	194	80	52
FLT 36	1120	672	36	67	587	52	3	199	80	52
FLT 38	1250	750	38	74	621	56	4	211	85	56
FLT 40	1385	831	40	74	654	60	4	223	90	60
FLT 42	1530	918	42	80	688	64	4	235	95	64



- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

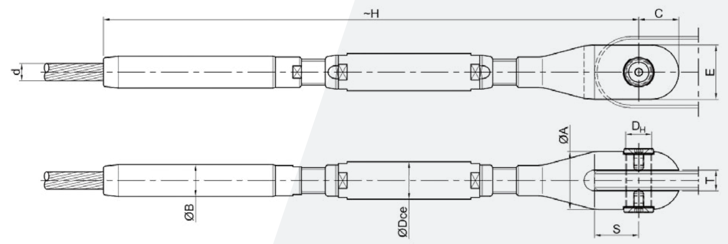
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

STAINLESS STEEL

TURNBUCKLE
X2CrNiMoN22-5-3

TBC

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	E (mm)	DH (mm)	Dce (mm)	B (mm)	S (mm)	T (mm)	Adj. (mm)
TBC 6	30	18	6	26	213	18	24	11	15	12	17	8	± 20
TBC 8	55	33	8	33	279	22	31	14	21	15	22	10	± 25
TBC 10	85	51	10	37	332	25	34	16	24	18	25	12	± 30
TBC 12	120	72	12	45	398	30	42	19	29	23	30	15	± 35
TBC 14	165	99	14	49	460	33	46	21	34	30	35	15	± 40
TBC 16	220	132	16	58	525	40	54	25	38	30	41	18	± 45
TBC 18	280	168	18	65	585	44	60	28	43	37	44	22	± 50
TBC 20	345	207	20	71	646	49	67	31	47	37	51	22	± 55
TBC 22	415	249	22	78	723	54	73	34	50	40	55	25	± 65
TBC 24	495	297	24	82	772	57	77	36	52	47	60	25	± 70
TBC 26	585	351	26	86	842	60	82	38	59	47	66	25	± 75
TBC 28	675	405	28	94	892	65	88	41	60	53	69	30	± 80
TBC 30	775	465	30	100	955	69	95	44	65	61	75	30	± 85
TBC 32	885	531	32	106	1012	74	100	47	69	61	80	32	± 90
TBC 34	1000	600	34	114	1081	79	108	50	74	67	84	35	± 95
TBC 36	1120	672	36	119	1128	82	112	52	75	67	88	37	± 100
TBC 38	1250	750	38	125	1191	86	118	54	80	74	91	40	± 105
TBC 40	1385	831	40	131	1256	91	124	57	85	74	98	40	± 110
TBC 42	1530	918	42	136	1317	94	129	59	90	80	102	42	± 115



- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance
- Adj. Adjustment

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

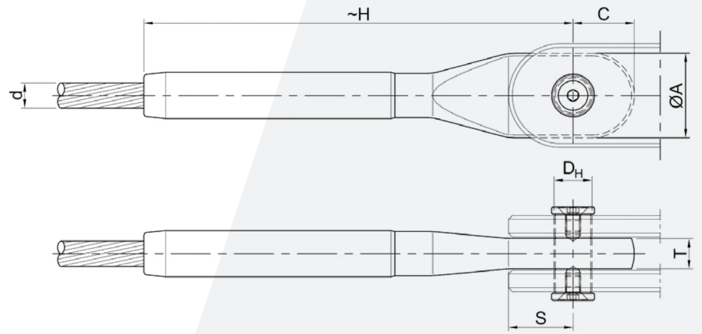
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

STAINLESS STEEL

CLOSED SWAGED SOCKET
X2CrNiMoN22-5-3

MCC

PRODUCT CODE	N_{uk} (1) (kN)	N_{Rd} (2) (kN)	d_{max} (mm)	ØA (mm)	~H (mm)	C (mm)	DH (mm)	S (mm)	T (mm)
MCC 6	30	18	6	26	105	19	11	17	8
MCC 8	55	33	8	33	139	24	14	22	10
MCC 10	85	51	10	37	166	27	16	25	14
MCC 12	120	72	12	45	200	32	19	30	16
MCC 14	165	99	14	49	230	35	21	35	19
MCC 16	220	132	16	58	265	42	25	41	22
MCC 18	280	168	18	65	297	47	28	44	26
MCC 20	345	207	20	71	330	51	31	51	28
MCC 22	415	249	22	78	362	56	34	55	30
MCC 24	495	297	24	82	393	59	36	60	38
MCC 26	585	351	26	86	423	62	38	66	42
MCC 28	675	405	28	94	455	68	41	69	44
MCC 30	775	465	30	100	488	72	44	75	46
MCC 32	885	531	32	106	519	77	47	80	52
MCC 34	1000	600	34	114	554	82	50	84	54
MCC 36	1120	672	36	119	583	86	52	88	56
MCC 38	1250	750	38	125	614	90	54	91	56
MCC 40	1385	831	40	131	647	94	57	98	58
MCC 42	1530	918	42	136	676	98	59	102	62



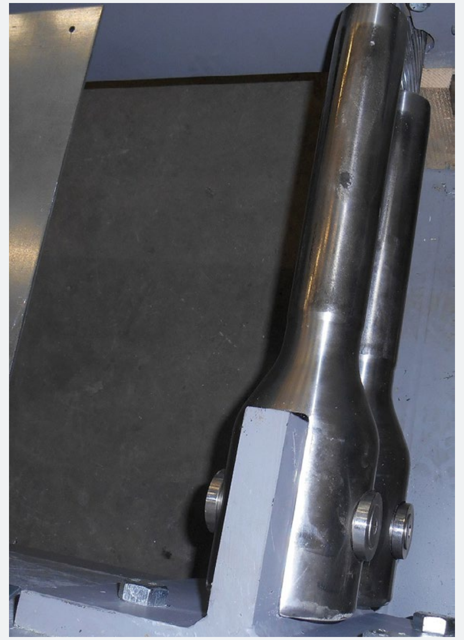
- d_{max} Max Strand Diameter
- N_{uk} Characteristic Breaking Strength
- N_{Rd} Design Resistance

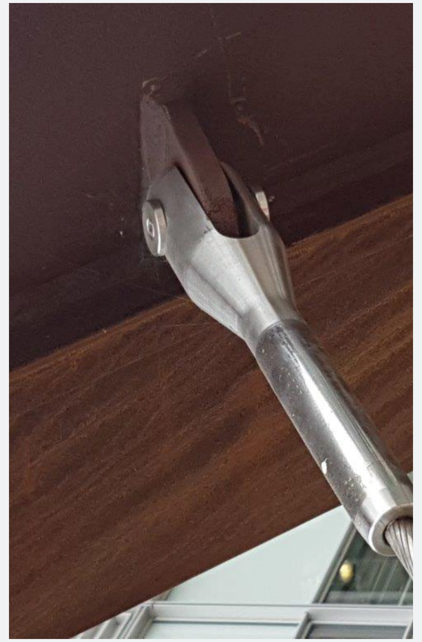
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

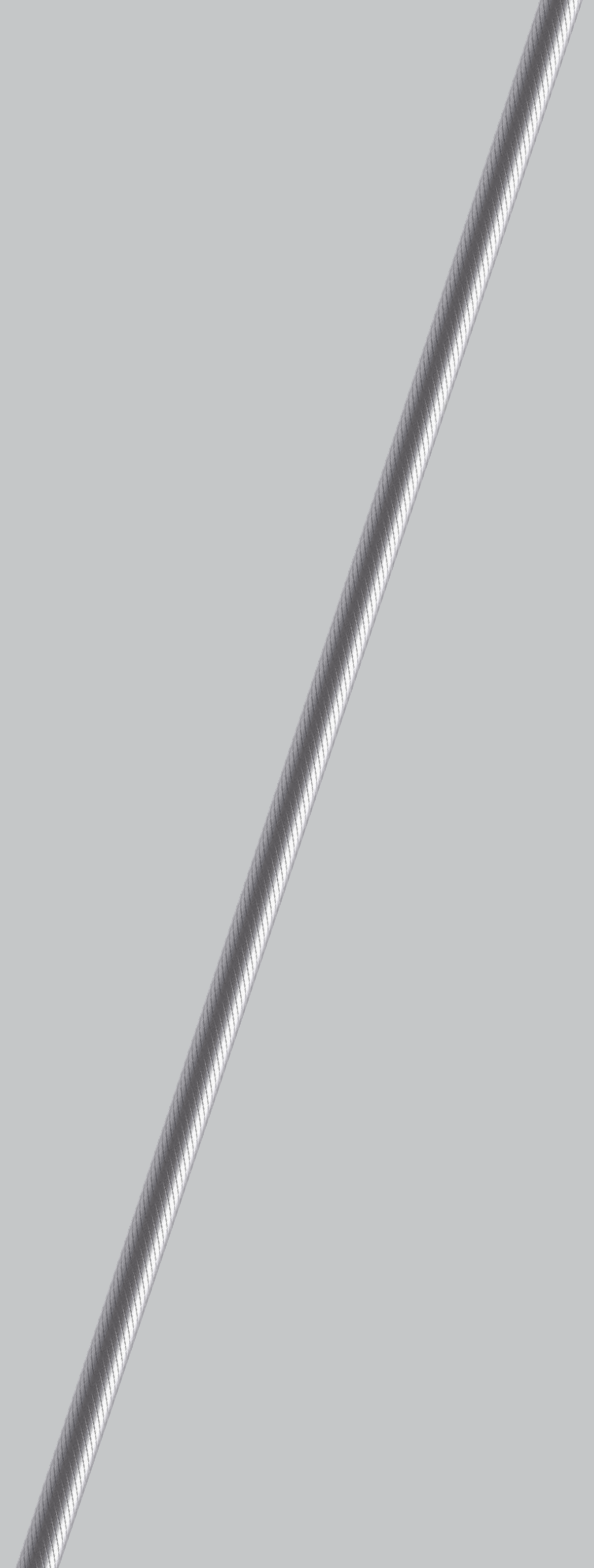
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

SOCKETS

	MATERIAL	NDT EXAMINATION
Stainless steel swaged Sockets type MAC, MAC-R, MCC, TBC and FLT	X2CrNiMoN22-5-3 (1.4462 EN 10088)	• Ultrasonic Test (EN 10308) • Visual and Dimensional Inspection
Stainless steel pin	X4CrNiMo16-5-1 (1.4418 EN 10088)	• Ultrasonic Test (EN 10308) • Visual and Dimensional Inspection







CABLE INSTALLATION AND TENSIONING,
INSPECTION AND MAINTENANCE SERVICES,
SPECIAL CUSTOMISED PRODUCTS

CABLE INSTALLATION AND TENSIONING, INSPECTION AND MAINTENANCE SERVICES

Based on decades of experience in the field of structural cable engineering, Teufelberger-Redaelli's scope extends beyond design, manufacture, supply and delivery of cable systems. It is essential that cable installation and tensioning are carried out in a safe, secure and well planned manner.

Teufelberger-Redaelli has a specialist team of site technicians supported by construction engineering expertise and an extensive fleet of industry leading installation and tensioning equipment. Whether in a new build environment or in a renovation and replacement of an existing structure our dedicated site engineering team are available to discuss the challenges of your project. They can offer standard and customised installation and tensioning solutions to suit your site conditions and constraints.

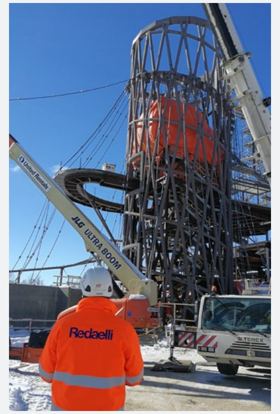
Once a structure has been built and the cables begin their service life it is vitally important that the cable system is regularly inspected and maintained. The inspection and maintenance cycle takes into consideration a number of factors including the required design load cycles and environmental impacts. Teufelberger-Redaelli Site Technicians are available 365 days per year to help inspect and maintain your cable system which is usually a critical part of the overall structure.

CABLE INSTALLATION AND TENSIONING

Correct assembly, installation and tensioning of cable assemblies on site is essential to ensure cables are installed safely, on time, within budget and to specification. Teufelberger-Redaelli aims to engage at the earliest possible stage of the project design process to ensure all that options and all constraints have been considered. With a wealth of experience there are often several different installation and tensioning options that can be studied and ultimately employed. Engagement with Teufelberger-Redaelli's site engineering team during design phase means a collaborative approach taken with the design team and the construction teams to ensure the fulfilment of client's project and prevent costly mistakes and remedial works.

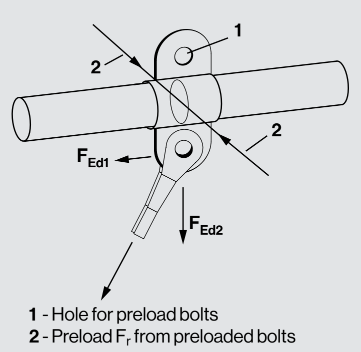
Specific specialist areas of expertise provided by Teufelberger-Redaelli include:

- Design support to the cable system.
- Installation options including lay out of components on site and pre-assembly plans.
- Pre-assembly of cable assemblies and any connections, including clamps and spacers.
- Specifying, planning and mobilisation of cable tensioning equipment.
- Assistance with scheduling of site activities relating to cable installation.
- Assistance with tensioning sequence and tensioning stage options.
- Tensioning of cable assemblies, individually, in pairs, groups or complex synchronised lift programmes.
- Final cable forces check with a final tensioning report.
- Assistance with applying ancillary cable items, e.g. including application of Teufelberger-Redaelli Tensocoat cable corrosion protection to the cable surfaces and other approved paint systems.
- Assistance with de-mobilising labour, equipment and packaging.
- Planning, mobilising end executing de-tensioning of cable assemblies and cable nets from existing structures.



TEUFELBERGER-REDAELLI CABLE CLAMPS

Teufelberger-Redaelli regularly assists with the design, manufacture and installation of multiple cable clamp options to suit the structure's application. Cable clamp design are prepared and executed in accordance with International Standards including EN 1993-1-11, EN 1993-1-1 and EN 1993-1-8.

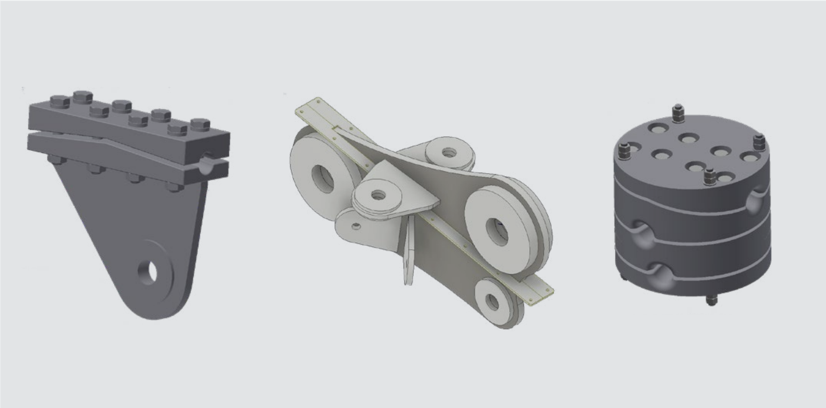


$$FED \parallel \leq \frac{(FED \perp + Fr)\mu}{\gamma M, fr}$$

Where

FED‖ =	component of external design load parallel to the cable
FED⊥ =	component of the external design load perpendicular to the cable
Fr =	radial clamping force considered that may be reduced by items in 0(3)
μ =	coefficient of friction
γM, fr =	partial friction factor

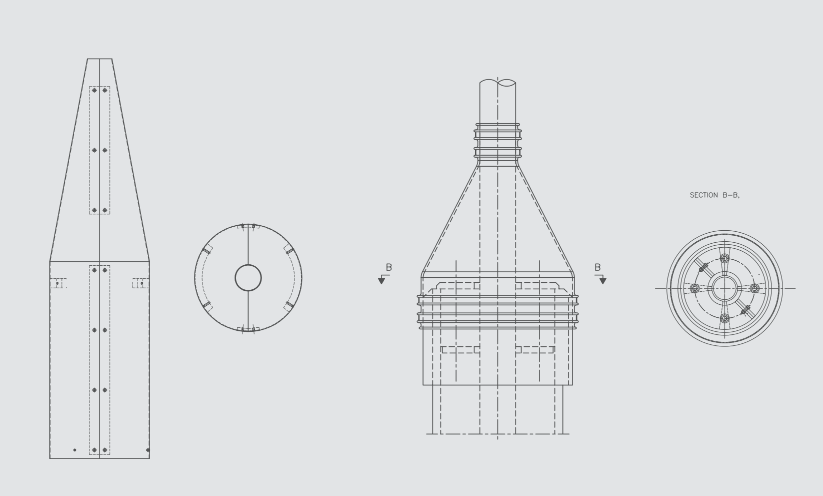
Depending on the application, clamps are either machined from solid steel sections or manufactured as customised cast steel pieces. Every clamp has its own unique friction coefficient value depending on the design and application of the structure. Thanks to Teufelberger-Redaelli's detailed knowledge and historical test data, an appropriate value of friction is selected for each specific clamp application. Spacer clamps can also be designed to fit cable intersections with different inclination angles between the cable axis, to suit each specific structure's design.

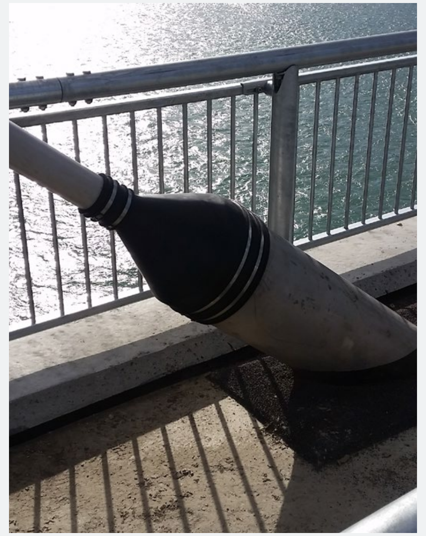


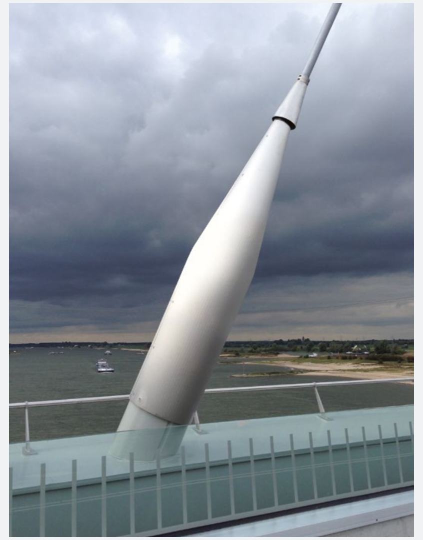
Particular attention is given to ensure all clamp types are designed to an optimum and adequate geometrical shape including rounded edges and with a specific bolt tensioning procedure. NDT tests can be performed on request.

ANCILLARY CABLE ITEMS

Teufelberger-Redaelli design and manufacture cable related ancillary fittings according to project specific requirements. These components include anti-vandalism devices, which can be installed around the cables adjacent to the lower socket anchorage to help prevent intentional damage and neoprene weather hood sleeves which protect cable lower anchorages from drench water ingress. Each customised solution is designed for the specific application in cooperation with the client to ensure the correct solution for the final application.







CABLE VIBRATION INFORMATION

A relatively small cross section area, a light mass and the lack of bending stiffness are characteristic properties of cables used in tensile structure applications. The result is these structural elements can be sensitive to vibrations depending on the in-service load case and natural harmonic frequencies of the overall structure. Whilst there are a range of cables vibration mechanisms, the two most common can be broadly grouped into those generated by wind and those related to the loading of the structure. Several countermeasures can be adopted to prevent excessive wind induced cable vibrations.

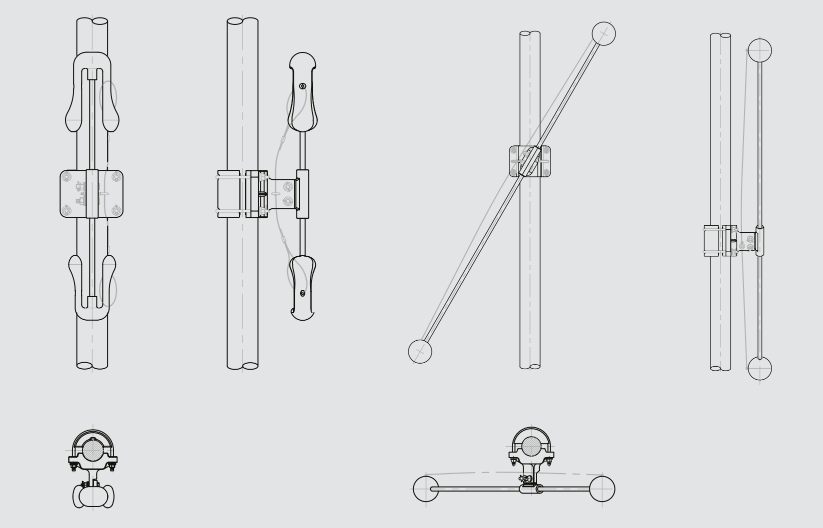
In general terms longer cables are more susceptible to vibrations, due to their larger wind exposure and lower damping values. Reference is made to EN 1993-1-11 for wind effects to be considered in design of structures with tension components.

HIGH FREQUENCY AND LOW FREQUENCY DAMPERS

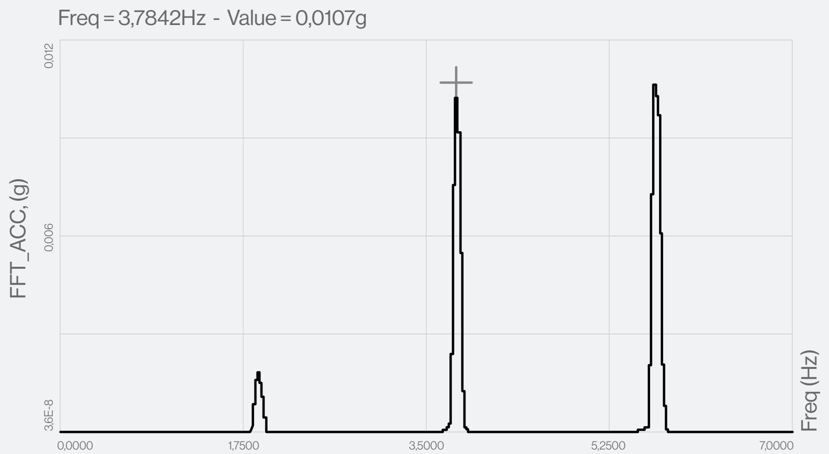
Teufelberger-Redaelli designed dampers can be applied on individual cables to increase the structural damping and help suppress excessive wind-induced vibrations. The cable system can be tested in a wind tunnel to investigate the risk of aerodynamic instability and determine the key parameters needed to design the damping system. An appropriate combination of high and low frequency damper can generally guarantee an effective control of vortex-induced vibration, which are one of the more common occurring oscillations and which represent a serious risk for the cable's long-term fatigue resistance.

CABLES TENSION MEASUREMENTS WITH ACCELEROMETERS

In certain circumstances, cable natural vibration frequencies can also conveniently be used to measure cables forces by means of accelerometers. This system is efficient and adaptable and it minimises the time required to perform a lengthy and costly cable force survey.



The method allows for an estimation of cable force based on the signal record by attaching an accelerometer on the cable and the frequencies of cable excitation are measured accordingly. The system is rapid and does not require any mounting and de-mounting of unwieldy tensioning equipment.



Cable axial loads are estimated considering the simply supported beam model subjected to an axial tension. Using the corresponding analytical formulation, the key parameters to determine the tension from the natural frequency are the effective vibration length, the cable mass and the cable bending stiffness. Please note however it is not possible to employ this method if there are cable clamps intersecting along the length of the cable.

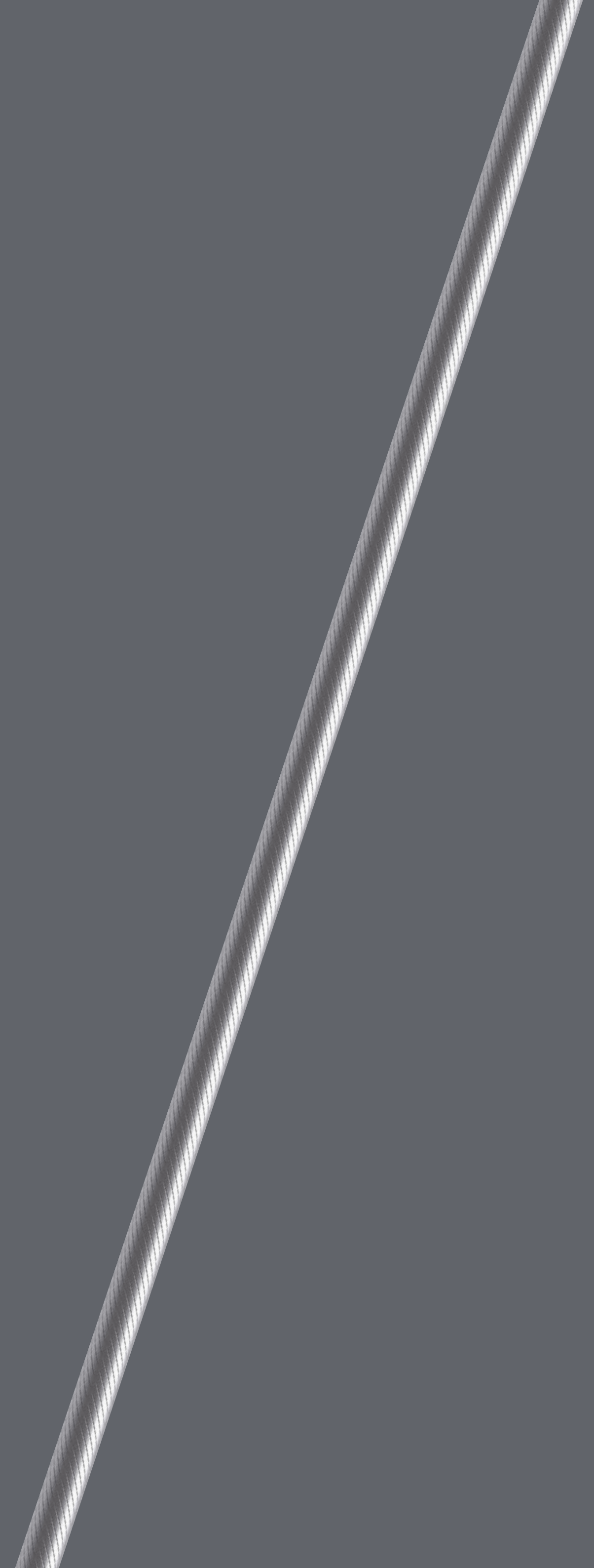
SERVICES

INSPECTION AND MAINTENANCE SERVICES

Regular, carefully planned maintenance activities are essential to protect the long-term health of cable supported structures. Planning and executing these cable maintenance activities is an important core part of Teufelberger-Redaelli's after service offering. Depending on the type of the structures, the environmental conditions and site access, a cable maintenance plan can be prepared which can provide a detailed overview of the different life stages of the structure and the related recommended courses of action and support services. Depending on each service life stage, different types of control and activities are required which include:

- Basic visual observation, to ensure the consistent geometry and cable forces are present in all elements of the cable assembly e.g. cables, sockets and any ancillary items.
- Visual inspection, to verify the status of the cable corrosion protection system without interrupting the normal operations of the structure.
- Simple inspection, to assess the surface and external wires condition and the status of the corrosion protection. It will include measuring the thickness of the protection layers of the cable systems and checking the socket cone setting. It may also include dismantling, removing and replacing the cable corrosion protection systems and may require, special access to each of the cable components that are to be inspected.
- Main inspection, comprehensive activities usually carried out in addition to the visual and simple inspection activities. It will include extended instrument checks for cable force measurement to check the permanence of the prestressing condition, cable re-tensioning in order to guarantee the efficiency of the structure, a geometric topographic survey, dismantling or removal and replacement of corrosion protections or cable components, special access to each of the cable components of the structural cable system.

Other inspection and maintenance activities can be defined specifically for each project.



REFERENCES

TECHNICAL PRODUCT DATA

in progress

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
PEDESTRIAN BRIDGE IN ATHENS	GRC	ATHENS	ELEMKA S.A.	CABLE SYSTEM SUPPLY	IN PROGRESS
LOANO CHURCH MAINTENANCE	ITA	LOANO (SV)	PARROCCHIA SAN PIO X	MAINTENANCE	IN PROGRESS
DUBAI FLARE STACK - CABLES REPLACEMENT	UAE	DUBAI	AL MASAOOD OIL INDUSTRY	CABLE SYSTEM SUPPLY	IN PROGRESS
PENSILEVA-Q8 CABLE STAYED ROOF	ITA	PADERNO DUGNANO (MI)	S.A.C.I.F. SRL	CABLE SYSTEM SUPPLY	IN PROGRESS
EGYPTIAN ARMY STADIUM	EGY	CAIRO	ORASCOM CONSTRUCTION S.A.E	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
FRONT FOOTBRIDGE	ITA	FRONT (TO)	O.M.C. DI GRAGLIA GEOM. GIUSEPPE SR	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
FIRST OGRE BRIDGE	LT	RIGA	SIA OK BUVMATERIALI	CABLE SYSTEM SUPPLY	IN PROGRESS
STAYED CABLE FOOTBRIDGE KORNIK	PL	KORNIK	ATM SP. Z O.O.	CABLE SYSTEM SUPPLY	IN PROGRESS
MARINA DECK STAYED CABLE FOOTBRIDGE	AT	WIEN	PORR BAU GMBH	CABLE SYSTEM SUPPLY	IN PROGRESS
STRÖMSUND BRIDGE	SWE	STRÖMSUND	TRAFIKVERKET	CABLE SYSTEM SUPPLY	IN PROGRESS
PEDESTRIAN BRIDGE SOUTH FRANCE	FR	CHÂTEAU-ARNOUX-SAINT-AUBAN	JOLY & PHILIPPE	CABLE SYSTEM SUPPLY	IN PROGRESS
LIFTING BRIDGE TROLLHATTAN	SWE	TROLLHATTAN	TRAFIKVERKET	CABLE SYSTEM SUPPLY	IN PROGRESS
PARKLINKS BRIDGE	PHL	QUEZON	BBR PHILIPPINES CORPORATION	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
ONE PORT WILTON FACADE	IRL	DUBLIN	PERMASTEELISA S.p.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
HLUBOKÁ BRIDGE 1-2	CZ	HLUBOKÁ	TENSION SYSTEMS S.R.O.	CABLE SYSTEM SUPPLY	IN PROGRESS
ORSOLINA THEATER	ITA	ASTI	CO.GE.FA SPA	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
CABLE NET ROOF	IRQ	ERBIL	ASMA GERME MEMBRAN SISTEMLERI	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
WONJU GANHYUN 2ND SUSPENSION BRIDGE	KOR	WONJU-SI	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	IN PROGRESS
STAYED CABLE BRIDGE	CH	GENEVA	SOTTAS SA	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
ARCH BRIDGES SS.99 MATERA	ITA	MATERA	COMES SRL	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
ESTADIO CIUDAD DE VALENCIA (LEVANTE UD STADIUM)	ESP	VALENCIA	GRUPO BERTOLIN	CABLE SYSTEM AND MEMBRANE SUPPLY AND INSTALLATION	IN PROGRESS
OCEANPIREN FOOTBRIDGE	SWE	HELSINGBORG	PEAB ANLAGGNING AB	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
BRIDGE ON THE HIGHWAY A26	AT	LINZ	MAEG COSTRUZIONI S.P.A.	CABLE SYSTEM SUPPLY	IN PROGRESS
FOOTBRIDGE SHARJAH	UAE	SHARJAH	HARDCO BUILDING CONTRACTING LLC.	CABLE SYSTEM SUPPLY AND INSTALLATION	IN PROGRESS
SAINT ELIJO SUSPENSION BRIDGE	USA	SAN DIEGO COUNTY	SCHWAGER DAVIS, INC.	CABLE SYSTEM SUPPLY	IN PROGRESS
WANJU DAEDUNSAN SUSPENSION BRIDGE	KOR	WANJU-GUN	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	IN PROGRESS
CHEONGPYEONGSA SUSPENSION BRIDGE	KOR	CHUNCHEON-SI	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	IN PROGRESS

2020

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
MONTEVIDEO ARCH BRIDGE	URY	MONTEVIDEO	GRUPO DIZMAR	CABLE SYSTEM SUPPLY	2020
YANGNYEONGSAN SUSPENSION BRIDGE	KOR	OKCHEON-GUN	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2020
KOSZALIN AMPHITHEATER	PL	KOSZALIN	ATM SP. Z O.O.	CABLE SYSTEM SUPPLY	2020
THAMES BRAY BRIDGE	UK	MAIDENHEAD	BALFOUR BEATTY VINCI JV	CABLE SYSTEM SUPPLY AND INSTALLATION	2020
LOTTE TOWER SUSPENSION BRIDGE	KOR	SEOUL	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2020
FACADE KING ABDULLAH FINANCIAL DISTRICT	SAU	RIYADH	GIUGIARO ARCHITETTURA & STRUCTURES	INSTALLATION	2020
TJORN BRIDGE	SWE	TJORN	SVEVIA AB	CABLE SYSTEM SUPPLY	2019
SOLKAN FOOTBRIDGE	SLO	SOLKAN	KASKADER D.O.O.	CABLE SYSTEM SUPPLY	2020
ULSAN DAEWANGAM SUSPENSION BRIDGE	KOR	ULSAN	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2020
TAFF VALE FOOTBRIDGE	UK	TAFF VALE	CENTREGREAT ENGINEERING LTD	CABLE SYSTEM SUPPLY	2020
FIRST OGRE BRIDGE	LT	RIGA	SIA OK BUVMATERIALI	CABLE SYSTEM SUPPLY	2020
SWAN BRIDGE ZIPLINE	AUS	PERTH	ARCUS WIRE	CABLE SYSTEM SUPPLY	2020
FORCHACH HANGERBRÜCKE	A	REUTTE	HTB BAUGESELLSCHAFT M.B.H.	CABLE SYSTEM SUPPLY	2020
JECHEON OKSUN SUSPENSION BRIDGE	KOR	JECHEON-SI	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2020
TWO BRIDGES CANYON PROJECT	GEO	TSALKA	ELITA BURJI LTD	CABLE SYSTEM SUPPLY	2020
MEMBRANE IN SPAIN	ESP	LAS PALMAS	GARCITECNIA, S.L.	CABLE SYSTEM SUPPLY	2020
CAVA DÈ TIRRENI FOOTBRIDGE	ITA	CAVA DÈ TIRRENI	ACCARINO COSTRUZIONI SNC.	CABLE SYSTEM SUPPLY	2020
REGGIO CALABRIA STADIUM MAINTENANCE	ITA	REGGIO CALABRIA	CITTÀ DI REGGIO CALABRIA	CABLE SYSTEM SUPPLY AND INSTALLATION	2020
FOOTBRIDGES IN ANDORRA	AD	ANDORRA	I.D.M. SAS	CABLE SYSTEM SUPPLY	2020
GOSUNG POKPOAM SUSPENSION BRIDGE	KOR	GOSEONG-GUN	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2020
ORSA TIBETAN BRIDGE	ITA	BELLUNO	PICCOLE DOLOMITI S.C.A.R.L.	CABLE SYSTEM SUPPLY	2020
ARQIVA BLACK MOUNTAIN STAY CABLES	IRL	BELFAST	BALFOUR BEATTY UTILITY SOLUTIONS LIMITED	CABLE SYSTEM SUPPLY	2020
DALY'S BRIDGE	IRL	COCK	MACKEY PLANT	CABLE SYSTEM SUPPLY AND INSTALLATION	2020
SANCHEONG SUSPENSION BRIDGE	KOR	SANCHEONG -GUN	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2020
PORT CAMPBELL SUSPENSION BRIDGE	AUS	PORT CAMPBELL	ARCUS WIRE	CABLE SYSTEM SUPPLY AND INSTALLATION	2020
ICE ARENA PRESOV	SVK	PRESOV	TENSION SYSTEMS S.R.O.	CABLE SYSTEM SUPPLY	2020
WHITLEY SOUTH CABLE STAYED BRIDGE	UK	COVENTRY	CLEVELAND BRIDGE UK LTD	CABLE SYSTEM SUPPLY AND INSTALLATION	2020
CYCLE AND PEDESTRIAN PATH	ITA	TRENT	IMPRESA COSTRUZIONI FONTAN	CABLE SYSTEM SUPPLY	2020

2019

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
STRESSED RIBBON FOOTBRIDGE	UK	WALES	CRAIG Y BWLA ESTATE OF RICHARD CHEN	CABLE SYSTEM SUPPLY	PROJECT CANCELLED
STACKER MACHINE CABLES	ITA	PIACENZA	MO.TRI.DAL. SPA	CABLE SYSTEM SUPPLY	2019
GALECOPPER BRIDGE INSPECTION	NLD	UTRECHT	ARUP	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
THE LONDON EYE	UK	LONDON	HOLLANDIA UK LIMITED	CABLE SYSTEM REPLACEMENT	2019
LUZEC FOOTBRIDGE	CZE	LUZEC	VSL SYSTEMY S.R.O.	CABLE SYSTEM SUPPLY	2019
FERRIS WHEEL	NLD	DONGEN	MENNENS DONGEN B.V.	CABLE SYSTEM SUPPLY	2019
SPORTS HALL ORZINUOVI	ITA	ORZINUOVI	ITAL ENGINEERING 4.0 SRL	CABLE SYSTEM SUPPLY	2019
MAINTENANCE VIGEVANO ROOF	ITA	VIGEVANO (PV)	COMELZ SPA	INSPECTION AND MAINTANANCE OF INDUSTRIAL BUILDING OF COMELZ PROPERTY	2019
NAERHEDEN CABLE STAYED BRIDGE	DNK	NAERHEDEN	VALMONT SM	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
ARCH BRIDGE BONDENO	ITA	BONDENO (FE)	DA CARPENTERIE SRL	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
FOOTBRIDGE ORTISEI	ITA	ORTISEI (BZ)	FACCHIN ENGINEERING	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
AVIARY SHARJAH ROOF	UAE	SHARJAH	HARDCO BLDG.CONT.LLC.	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
INGURI RIVER FOOTBRIDGE	GEO	ANAKLIA	CRP WOOD DEVELOPMENT LTD	MAINTENANCE	2019
FERRIS WHEEL	MEX	CANCUN	MENNENS DONGEN B.V.	CABLE SYSTEM SUPPLY	2019
DOMES POLYTECHNICAL MUSEUM	RUS	MOSCOW	NPO SOYUKANAT	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
CABLES FOR CONSOLIDATION OF PIO ALBERGO TRIVULZIO PALACE	ITA	MILAN	ARCO COSTRUZIONI GENERALI	CABLE SYSTEM SUPPLY	2019
ARCH BRIDGE BONDENO	ITA	BONDENO (FE)	DA CARPENTERIE SRL	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
PESCIA FLOWER MARKET MAINTENANCE	ITA	PESCIA	SISTRAL SRL	CABLE SYSTEM SUPPLY	2019
TAFF VALE FOOTBRIDGE	UK	CARDIFF	CENTREGREAT ENGINEERING LTD	CABLE SYSTEM SUPPLY	2019
HIPPODROME	ITA	MODENA	SOC. MODENESE PER ESPOSIZIONI FIERE E CORSE DI CAVALLI S.P.A.	CANTILEVER ROOF CABLES INSPECTION AND MAINTENANCE	2019
BEAVERS ROAD FOOTBRIDGE	AUS	VICTORIA	ARCUS WIRE	CABLE SYSTEM SUPPLY	2019
CABLES REPLACEMENTS FOR STACKER - BHP - SPENCE	CHL	LAS CONDES (SANTIAGO)	TRIPLE C INTERNATIONAL SPA	CABLE SYSTEM SUPPLY	2019
MINING MACHINE ROPE REPLACEMENT	CHL	ANTOFAGASTA	TRIPLE C INTERNATIONAL S.P.A.	CABLE SYSTEM SUPPLY	2019
EXPANSION OF TEST CENTRE OSTERILD GUY ROPES	DNK	OSTERILD	CERTEX PETER HARBOP A/S	CABLE SYSTEM SUPPLY	2019
KEN ROSEWALL ARENA	AUS	SIDNEY	FABRITECTURE	CABLE SYSTEM SUPPLY	2019
DIGITA MAST GUY ROPES	FIN	PYHANTUNTURI	DIGITA OY	CABLE SYSTEM SUPPLY	2019
BISKUPIA GÓRKA BRIDGE	POL	GDAŃSK	ATM SP	CABLE SYSTEM SUPPLY	2019

2019-2018

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
A14 NMU SWAVESEY AND BAR HILL BRIDGES	UK	CAMBRIDGE	VICTOR BUYCK STEEL CONSTRUCTION	CABLE SYSTEM SUPPLY	2019
CABLE SUPPLY FOR AL WASL PLAZE TRELLIS - DUBAI	UAE	DUBAI	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY	2019
SCOTLAND MAST STAY CABLES SUPPLY ARQIVA	UK	ABERDEENSHIRE	VIRTUA UK LTD	CABLE SYSTEM SUPPLY	2019
FOOTBRIDGE OVER THE ZELJENICA RIVER	BIH	SARAJEVO	PONT D.O.O. SARAJEVO	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
BRIDGE WS3-5	POL	BYDGOSZCZ	BBR POLSKA SP. Z O.O.	CABLE SYSTEM SUPPLY	2019
WARM SPRINGS BRIDGE	USA	FREEMONT CALIFORNIA	SCHWAGER DAVIS INC.	CABLE SYSTEM SUPPLY	2019
SCIOTO RIVER FOOTBRIDGE	USA	DUBLIN (OHIO)	KOKOSING COSTR. COMPANY, INC.	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
SARDAR PATEL MOTERA STADIUM	IND	AHMEDABAD	LARSEN&TUBRO LIMITED CONSTRUCTION	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
TANA BRIDGE	NOR	TANA BRU	STATENS VEGVESEN REGION NORD	CABLE SYSTEM SUPPLY AND INSTALLATION	2019
PEDESTRIAN AND CYCLING-BRDIGE	ITA	BEINASCO	COMUNE DI BEINASCO	MAINTENANCE AND INSPECTION	2018
SUNCHANG SUSPENSION FOOTBRIDGE	KOR	SUNCHANG-GUN	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2018
GEOCHANG THREE-WAY SUSPENSION FOOTBRIDGE	KOR	GEOCHANG-GUN	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2018
CRASH BARRIERS YAMUNA BRIDGE	IND	DEHLI	GAMMON - C CIDADE - TENSACCIAI JV	CABLE SYSTEM SUPPLY	2018
TASMAN MEMORIAL HIGHWAY	AUS	TANZANIA	SRG PRODUCTS PTY LTD	CABLE SYSTEM SUPPLY	2018
TIBET FOOTBRIDGE LAGO DI CAREZZA	ITA	NOVA LEVANTE (BZ)	METALL PICHLER	CABLE SYSTEM SUPPLY	2018
STAY CABLES FOR INDUTRIAL PLANT	ITA	TRUCCAZZANO	TERMOKIMIK CORPORATION SPA	CABLE SYSTEM SUPPLY	2018
ARCH BRIDGE ORADEA	ROU	ORADEA	FREYROM S.A.	CABLE SYSTEM SUPPLY	2018
TILLF BRIDGE	BEL	TILLF	BAM GALERE	CABLE SYSTEM SUPPLY AND INSTALLATION	2018
PEDESTRIAN SWING BRIDGE	ZAF	CAPE TOWN	AMSTEELE SYSTEMS	CABLE SYSTEM SUPPLY	2018
DUBAI AIRPORT	EAU	DUBAI	CLEVELAND BRIDGE MIDDLE EAST	CABLE SYSTEM SUPPLY AND INSTALLATION	2018
FOOTBRDIGE IN VAL DE RIVA	ITA	TRENT	ZUGLIANI SRL	CABLE SYSTEM SUPPLY	2018
SUSPEDED PIPELINE BRIDGE SERBIA	SRB	SERBIA	FILOS MOSTOVILTD	CABLE SYSTEM SUPPLY	2018
FOOT BRIDGE IN TORRENTE CORDEVOLE	ITA	ALLEGHE	OFFICINE BERTAZZON	CABLE SYSTEM SUPPLY AND INSTALLATION	2018
ARCH BRIDGE AIX NOLETTE	FRA	AIX NOLETTE	EIFFAGE METAL	CABLE SYSTEM SUPPLY	2018
ARQIVA MENDIP TRANMISSION STATION	UK	WELLS SOMERSET	BABCOCK NETWORKS LIMITED	CABLE SYSTEM SUPPLY	2018
AL BAYT AT AL KHOR CITY ENERGY CENTRE	QAT	DOHA	GALFAR AL MISNAD ENG & CONTR WLL	CABLE SYSTEM SUPPLY	2018
NOWY SACZ ARCH BRIDGE	POL	NOWY SACZ	ATM SP. Z O.O	CABLE SYSTEM SUPPLY AND INSTALLATION	2018

2018-2017

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
PISEK BRIDGE	CZE	PRAGUE	TENSION SYSTEMS S.R.O.	CABLE SYSTEM SUPPLY	2018
BANGCHUCK ISLAND SUSPENSION FOOTBRIDGE	KOR	GUNSAN-SI	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2018
TEMPORARY CABLES	QAT	QATAR	MAEG COSTRUZIONI S.P.A.	CABLE SYSTEM SUPPLY	2018
MALL LUXEMBOURG	LUX	LUXEMBOURG	TECHNO METAL INDUSTRIES SPRL	CABLE SYSTEM SUPPLY	2018
DUBLIN BRIDGE	USA	DUBLIN (OHIO)	KOKOSING COSTR. COMPANY, INC.	CABLE SYSTEM SUPPLY AND INSTALLATION	2018
CHISWICK PARK FOOTBRIDGE	UK	LONDON	SEVERFIELD UK	CABLE SYSTEM SUPPLY	2018
PAUL BIYA STADIUM	CMR	YAOUNDÉ	MAEG COSTRUZIONI S.P.A.	CABLE SYSTEM SUPPLY	2018
PEDESTRIAN AND CYCLING BRIDGE S.M. ANGELI (RIONE LIBERTÀ)	ITA	BENEVENTO	DA CARPENTERIE SRL	CABLE SYSTEM SUPPLY AND INSTALLATION	2018
ADANA KOZA ARENA	TUR	ADANA	ALKATAS INSAAT VE TAAHHUT AS & ILGAZLAR	CABLE SYSTEM SUPPLY AND INSTALLATION	2018
SWAN RIVER PEDESTRIAN BRIDGE	AUS	PERTH	YORK RIZZANI JOINT VENTURE	CABLE SYSTEM SUPPLY AND INSTALLATION	2018
WONJU-GANHYEON SUSPENSION FOOTBRIDGE	KOR	WONJU-SI	CABLEBRIDGE CO.LTD.	CABLE SYSTEM SUPPLY	2017
ARCH BRIDGE IN GROSSETO	ITA	GROSSETO	BIT SPA	CABLE SYSTEM SUPPLY	2017
YANG PYUNG FOOTBRIDGE	KOR	YANG PYUNG-GUN	CABLEBRIDGE CO.LTD..	CABLE SYSTEM SUPPLY	2017
MAJANG LAKE SUSPENSION FOOTBRIDGE	KOR	PAJU-SI	CABLEBRIDGE CO.LTD..	CABLE SYSTEM SUPPLY	2017
SUSPENDED ROOF BERGAMO EXPO	ITA	BERGAMO	BERGAMO FIERA NUOVA	MAINTENANCE	2017
GUYLINES	BEL	BRUSSELS	XANT	CABLE SYSTEM SUPPLY	2017
FOOTBRIDGE TANGIER	MAR	TANGIER	ACTOMETAL	CABLE SYSTEM SUPPLY	2017
CABLE STAYED ROOF SARMATO	ITA	PIACENZA	STC	CABLE SYSTEM SUPPLY	2017
FOOTBRIDGE AL ITTIHAD	UAE	SHARJAH	WAAGNER BIRO GULF LLC	CABLE SYSTEM SUPPLY AND INSTALLATION	2017
RIYADH METRO	UAE	RIYAD	EVERSENDAI ENGINEERING SAUDI WLL	CABLE SYSTEM SUPPLY	2017
THE JACK WILLIAMS GATEWAY BRIDGE	UK	BRYNMAWR (GWENT)	VICTOR BUYCK STEEL CONSTRUCTION	CABLE SYSTEM SUPPLY	2017
BØKFJORD BRIDGE	NOR	SOR-VARANGER	SCHACHTBAU NORDHAUSEN STAHLBAU GMBH	CABLE SYSTEM SUPPLY AND INSTALLATION	2017
ASHTON TIED ARCH BRIDGE	ZAF	ASHTON	AMSTEELE SYSTEMS	CABLE SYSTEM SUPPLY	2017
AL WAHDA 5/6 ARCHES	QAT	DOHA	EVERSENDAI ENGINEERING QATAR WLL	CABLE SYSTEM SUPPLY AND INSTALLATION	2017
VISOKO BRIDGE	BIH	VISOKO	HERING D.D. SIROKI BRIJEG	CABLE SYSTEM SUPPLY	2017
SPORTS HALL LE CASELLE	ITA	AREZZO	COMUNE DI AREZZO	MAINTENANCE	2017
CRATI BRIDGE	ITA	COSENZA	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY	2017
WGIS BRIDGE REPLACEMENT HOIST AND COUNTERWEIGHT CABLES	UK	SALFORD	DAVY MARKHAM LTD	CABLE SYSTEM SUPPLY FOR WGIS LIFTING BRIDGE	2017

2017-2016

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
TENSO LITTA PALACE	ITA	MILAN	MOSCA PARTNERS	CABLE SYSTEM SUPPLY	2017
SUNDERLAND BEACON OF LIGHT	UK	SUNDERLAND	J&J CARTER LTD	SUPPLY OF CABLES FOR BEACON OF LIGHT	2017
SALAM PROJECT	SAU	JEDDAH	ALI TAMIMI SONS CO.	CABLE SYSTEM SUPPLY	2017
PROJECT IN RIYADH	SAU	RIYAD	ALI TAMIMI SONS CO.	CABLE SYSTEM SUPPLY	2017
AMRUN SHIPLOADER	AUS	QUEENSLAND	SANDVIK MINING AND CONSTRUCTION	CABLE SYSTEM SUPPLY	2017
TOTTENHAM HOTSPUR STADIUM	UK	TOTTENHAM	SEVERFIELD (UK) LTD	CABLE SYSTEM SUPPLY	2017
THE SHED CULTURAL CENTER	USA	NEW YORK	C & S WALLS S.R.L.	CABLE SYSTEM SUPPLY AND INSTALLATION	2017
VUOKSI ARCH BRIDGE	RUS	LOSEVO	JSC SEVERSTAL-METIZ	SUPPLY AND INSTALLATION HANGERS	2017
SAN DIEGO CONVENTION CENTER	USA	SAN DIEGO	BIRDAIR INC.	CABLE SYSTEM SUPPLY AND INSTALLATION	2017
AERIAL PIPELINE	ITA	FIÈ ALLO SCILIAR (BZ)	FALSERBAU SRL	SUPPLY OF MAIN, BACK AND PIPELINE CABLES	2017
CYCLE-PEDESTRIAN BRIDGE OVER BRENTA RIVER	ITA	PADUA	ZARA METALMECCANICA SRL	SUPPLY, INSTALLATION AND TENSIONING OF CABLES	2017
HERCILIO LUZ BRIDGE	BRA	FLORIANOPOLIS	TEIXEIRA DUARTE ENGENHARIA E CONTRUCOES S.A. SUCURSAL BRASIL	HDPE HANGERS SUPPLY	2017
FOOTBRIDGE AL ITTIHAD ROAD	UAE	SHARJAH	WAAGNER BIRO GULF LLC	SUPPLY AND INSTALLATION OF CABLES HANGERS SYSTEM	2017
AQUEDUCT SUSPENSION	FRA	ST BACHI	MECAP LTD	CABLE SYSTEM SUPPLY WITH HDPE SHEATHING	2017
MULAZZO SUSPENSION BRIDGE	ITA	MULAZZO	MULAZZO SOC. CONS. S R.L. OMBA IMPIANTI & ENG. S.P.A CASTALDO S.P.A	CABLE SYSTEM SUPPLY AND INSTALLATION	2017
CASTAGNETOLI SUSPENSION BRIDGE	ITA	CASTAGNETOLI	MULAZZO SOC. CONS. S R.L. OMBA IMPIANTI & ENG. S.P.A CASTALDO S.P.A	SUPPLY AND ASSISTANCE TO MOUNTING OF MURING WIRE ROPES, MAIN CABLES AND HANGERS	2017
STRUCTURAL CONSOLIDATION	ITA	AGRIGENTO	BUONTEMPO COSTANTINO & MICHELE SNC	CABLE SYSTEM SUPPLY	2017
KHALIFA INTERNATIONAL STADIUM	QAT	DOHA	MIDMAC/SXCO	CABLE SYSTEM SUPPLY AND INSTALLATION	2017
FOOTBRIDGE	ITA	TERNI	COBAR S.P.A.	STAY CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2016
LÅGEN BRIDGE	NOR	KVAM	IMPLENIA	HDPE COATED STAY CABLE SUPPLY, INSTALLATION AND TENSIONING	2016
FOOTBRIDGE	ITA	CASOLA IN LUNIGIANA (MS)	O.M.C.M. SNC	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2016
FLC FOR EXCAVATOR	RUS	RUSSIA	LLC TECI RUS	CABLES FOR ESCAVATOR SUPPLY	2016
CABLES FOR CANOPY	RUS	RUSSIA	AO "REDAELLI SSM"	SUPPLY, INSTALLATION AND TENSIONING OF CABLES	2016
NEW BRIDGE ST. PETERSBURG	RUS	ST. PETERSBURG	EW ENERPROM LTD	ROD SYSTEM SUPPLY	2016
CHANGCHUN STADIUM	CHN	CHANGCHUN	SHENZHEN SEEHIGH INTERNATIONAL TRADE LTD	SUPPLY OF RING CABLES	2016

2016

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
TIBETAN BRIDGE	ITA	POTENZA	IMPRESA COSTRUZIONE DUINO ALBERTO	SUPPLY OF MAIN, SAFETY AND STABILISING CABLES	2016
PEDESTRIAN BRIDGE ON RIVER BOSNA	BIH	ZAVIDOVIC	POROBIC DOO	CABLE SYSTEM SUPPLY	2016
AERIAL PIPELINE	GEO	TBLISI	ELITA BURJI LTD	CABLE SYSTEM SUPPLY	2016
CABLES FOR INFRASTRUCTURES	ESP	LLEIDA	INFRASTRUCTURES DE MUNTANYA SL	SUPPLY OF MAIN AND BACK CABLES	2016
BAUSKA SUSPENSION BRIDGE	LVA	BAUSKA	SIA OK BUVMATERIALI	SUPPLY OF MAIN, BACK AND STABILISING CABLES AND VERTICAL AND HORIZONTAL HANGERS	2016
FOOTBRIDGE EMEK ARAZIN	IL	JERUSALEM	N.E. LABA	SUPPLY OF BACK AND FRONT CABLES AND HANGERS	2016
RADOM FOOTBRIDGE	POL	RADOM	ATM SP. Z O.O.	SUPPLY OF MAIN CABLES	2016
DUBAI CANAL FOOTBRIDGE 1	UAE	DUBAI	MAEG COSTRUZIONI S.P.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	2016
DUBAI CANAL FOOTBRIDGE 2	UAE	DUBAI	MAEG COSTRUZIONI S.P.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	2016
ARCH BRIDGE OVER SERIO RIVER	ITA	CREMA	GHIDOTTI ENRICO & C. SNC	CABLE SYSTEM SUPPLY	2016
RIVA TRIGOSO BRIDGE	ITA	RIVA TRIGOSO (GE)	MAEG COSTRUZIONI S.P.A.	SUPPLY AND ASSISTANCE TO TENSIONING AND INSTALLATION OF HANGERS CABLES	2016
FOOTBRIDGE	ITA	CASTELMEZZANO (PZ)	DOLOMITI ROCCE SRL A SOCIO UNICO	SUPPLY OF MAIN AND STABILISING CABLES	2016
BØKFJORD BRIDGE	NOR	KIRKENES	SCHACHTBAU NORDHAUSEN STAHLBAU GMBH	SUPPLY, INSTALLATION AND TENSIONING OF HANGERS	2016
TIBETAN BRIDGE VALLI PASUBIO	ITA	VICENZA	GHELLER SRL	MAIN CABLES, GUARDRAIL CABLES AND STABILISING CABLE SYSTEM SUPPLY	2016
GUY ROPES FOR TV MAST	SWE	BORÅS (DALSJÖFORS)	TERACOM AB	STABILISING CABLE SYSTEM SUPPLY	2016
MEMBRANE ROOF	ITA	LOCATE TRIULZI (MI)	TAIYO EUROPE GMBH	STABILISING CABLE SYSTEM SUPPLY	2016
YAPI KREDI BANK FACADE	TUR	INSTANBUL	ENG METAL YAPI INSAAT TAAHHUT	VERTICAL AND HORIZONTAL CABLE SYSTEM SUPPLY	2016
SW TRAMWAY ENQUIRY	KOR	CHANGWON	HANIL CO.LTD.	STABILISING CABLE SYSTEM SUPPLY	2016
ITAS TCM C. 33760 GUY ROPES	UAE	ABU DHABI	FIVES I.T.A.S. S.P.A.	CABLE SYSTEM SUPPLY	2016
STADANO SUSPENSION BRIDGE	ITA	AULLA (MS)	CASTALDO S.P.A.	HANGER AND CABLE SUPPLY, INSTALLATION AND TENSIONING	2016
WANDA METROPOLITANO	ESP	MADRID	TAIYO EUROPE GMBH	CABLE SYSTEM SUPPLY	2016
PUENTE PRESIDENTE IBANEZ	CHL	PUERTO AYSEN	CVV INGENIERTA	HANGER CABLE SYSTEM SUPPLY	2016
GEBZE ORHANGAZI HIGHWAY	TUR	IZMIR	ASTALDI TURKEY BRANCH	RESTRAIN SYSTEM	2016
SEOUL-INCHEON INTERNATIONAL AIRPORT FACADE	KOR	SEOUL	COSPI	STAY CABLE SYSTEM SUPPLY FOR FACADE STRUCTURE	2016
GRAYSTON PEDESTRIAN BRIDGE	ZAF	SANDTON (JOHANNESBURG)	AMSTEELE SYSTEMS	CABLE SYSTEM SUPPLY	2016
HARD ROCK STADIUM	USA	MIAMI	HILLSDALE FABRICATORS	CABLE SYSTEM SUPPLY AND INSTALLATION	2016

2016-2015

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
OSMAN GAZI SUSPENSION BRIDGE	TUR	IZMIT	IHI	CABLE SYSTEM SUPPLY	2016
KING ABDULLAH FINANCIAL DISTRICT	SAU	RIYADH	GIUGIARO ARCHITETTURA & STRUCTURES	CABLE SYSTEM SUPPLY	2015
CITTADELLA ROAD AND PEDESTRIAN ARCH BRIDGES	ITA	ALESSANDRIA	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	2015
BIRD GARDEN	IRN	TEHERAN	SEKAF CO. SHARH INVESTMENT	CABLE SYSTEM SUPPLY FOR CABLE NET STRUCTURE	2015
FOOTBRIDGE	POL	PRZEMYŚL	ATM SP. Z O.O.	CABLE SUPPLY	2015
MUSEE D'ART DE NANTES	FRA	NANTES	SIMCO TECNOCOVERING SRL	CABLE SYSTEM SUPPLY FOR FACADE	2015
DAM NET	ITA	PRIOLO (SR)	MULTIMAN MANUTENZIONI	STAY CABLE SYSTEM SUPPLY	2015
FLARE	UAE	HABSHAN (ABU DHABI)	FLAMEOUT	TENSIONING SYSTEM SUPPLY	2015
MAST	LVA	ULBROKA (RĪGA)	CERTEX LATVIJA	CABLE SUPPLY	2015
CANTILEVER ROOF	ITA	VERONA	PANCALDI	CABLE SYSTEM SUPPLY	2015
CERTEX FLARE STACK	SWE	STENUNGSUND	CERTEX SVENSKA	CABLE SUPPLY	2015
GREYSTONE FOOTBRIDGE	UK	LIVERPOOOL	SH STRUCTURES	SUPPLY OF HDPE COATED STAY CABLES	2015
HIPPODROME	ITA	MODENA	SOCIETÀ MODENESE PER ESPOSIZIONI FIERE E CORSE DI CAVALLI S.P.A.	CANTILEVER ROOF CABLES INSPECTION AND MAINTENANCE	2015
FABRIC ROOF FOR OLIMPIC PARK	BRA	RIO DE JANEIRO	ODEBRECHT	CABLE SUPPLY	2015
VUOKSA RIVER BRIDGE	RUS	ST. PETERSBURG	AO "REDAELLI SSM"	HDPE COATED CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2015
ARCHEOLOGICAL AREA ROOF	MLT	TARXIEN	TAIYO EUROPE GMBH	CABLE SUPPLY	2015
YENI ESKISEHIR STADIUM	TUR	ESKIŞEHIR	MD INSAAT SANAYI VE TICARETA.S.	CABLE SYSTEM SUPPLY FOR STAYED ROOF	2015
WESTERN GATEWAY INFRASTRUCTURE SCHEME LIFTING BRIDGE	UK	SALFORD	DAVY MARKHAM LTD	CABLE SYSTEM SUPPLY	2015
NAD AL SHEBA ARENA (NAS ARENA)	UAE	DUBAI	EVERSENDAI ENGINEERING LLC	CABLE SUPPLY	2015
"LE CASELLE" PALASPORT MAINTENANCE	ITA	AREZZO	COMUNE DI AREZZO	MAINTENANCE INSPECTION OF ROOF CABLE TRUSSES	2015
STROMSUND BRIDGE	SWE	STROMSUND	TRAFIKVERKET	HDPE SUPPLY CABLES	2015
CHRISTCHURCH BRIDGE	UK	READING	HOLLANDIA	CABLE SYSTEM SUPPLY AND INSTALLATION	2015
GORDON'S LEAP BRIDGES	UK	GOBBINS PATH (NI)	MC LAUGHLIN & HARVEY	MAIN, STAY AND HANGER CABLE SYSTEM SUPPLY	2015
TRAFFIC LIGHT PORTAL	NLD	NIJMEGEN	JAN KUIPERS NUNSPEET	CABLE SYSTEM SUPPLY AND INSTALLATION	2015
FOOTBRIDGE	UK	STRABANE (NI)	SH STRUCTURES	CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2015
LA FLORIDA ROAD BRIDGE	ESP	OVIEDO	ASSIGNIA	CABLE SYSTEM SUPPLY	2015
ARCH BRIDGE OVER GRAVINA RIVER	ITA	BRADANICA (MT)	CIMOLAI S.P.A.	HANGER CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING	2015

2015-2014

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
STAVROS NIARCHOS CULTURAL CENTRE	GRC	ATHENS	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	2015
SUSPENDED FOOTBRIDGE	ITA	VAL MARTELLO (BZ)	ALPINTEC	CABLE SUPPLY	2015
BOLLAERT-DELELIS STADIUM (RC LENS)	FRA	LENS	URSSA	CABLE SUPPLY	2015
BRIDGE OVER VAGLI LAKE	ITA	LUCCA	ROMEI SRL	CABLE SUPPLY	2015
MALL OF QATAR	QAT	DOHA	EVERSENDAI	CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING	2015
KRASNODAR STADIUM	RUS	KRASNODAR	JSC SEVERSTAL-METIZ	CABLE SYSTEM SUPPLY AND INSTALLATION	2015
FATIH SULTAN MEHMET BRIDGE SECOND BOSPHORUS BRIDGE	TUR	INSTANBUL	IHI	CABLE SYSTEM SUPPLY	2015
BOĞAZIÇI KÖPRÜSÜ FIRST BOSPHORUS BRIDGE	TUR	INSTANBUL	IHI	CABLE SYSTEM SUPPLY	2015
HIGHWAY ARCH BRIDGES	ITA	PRATO	IMPRESIM SRL / COMECA	HANGER CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2015
KROKUS FOOTBRIDGE	RUS	MOSCOW	JSC SEVERSTAL-METIZ	CABLE SUPPLY, FORCE ADJUSTMENT AND FINAL TENSIONING	2015
MARINA INTERCHANGE ARCH	QAT	LUSAIL	NUROL GULF / SETTA WA	CABLE SYSTEM SUPPLY AND INSTALLATION	2015
SÃO VICENTE BRIDGE	BRA	SÃO PAULO	CONCREJATO SERVICOS TECNICOS DE ENG.	CABLE SYSTEM SUPPLY	2015
PHÄNOMENTA SCIENCE CENTRE	DEU	LÜDENSCHEID	ARNEGGER	CABLE SYSTEM SUPPLY AND INSTALLATION	2015
TJÖRN STAYED CABLE BRIDGE	SWE	TJÖRN	TRAFIKVERKET	HDPE CABLE SYSTEM SUPPLY	2014
BREVIK BRIDGE	NOR	BREVIK	STATENS VEGVESEN REGNSKAP	CABLES INSPECTION	2014
FERRIS WHEEL	UAE	DUBAI	PAX DESIGN - RU	CABLE SUPPLY	2014
ARCH FLYOVER BRIDGE	ITA	VADENA (BZ)	OFFICINE BERTAZZON	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2014
BRIENENOORD BRUG	NLD	ROTTERDAM	RIJKSWATERSTAAT	CABLES INSPECTION	2014
MILAN PLANT	ITA	RHO (MI)	ARKEMA	CABLE SYSTEM SUPPLY FOR CATENARY CABLE REPLACEMENT	2014
HIGHLINE 179 SUSPENSION FOOTBRIDGE	AUT	REUTTE	SWISSROPE	CABLE SYSTEM SUPPLY	2014
REINFORCEMENT OF PRESTRESSED CONCRETE BEAMS FOR DEWATERING PUMP	ITA	MANTUA	PAOLO BELTRAMI SPA	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2014
ARCH BRIDGE MIHAI BRAVU	ROU	BUCHAREST	BBR ROMANIA	CABLE SUPPLY	2014
SUSPENDED FOOTBRIDGE	ITA	MARZABOTTO (BO)	COMUNE DI MARZABOTTO	MAIN CABLE SUBSTITUTION CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2014
RAY WAY TOWER	ITA	GRANAROLO (BO)	BI&S	CABLE SUPPLY	2014
RIJSWIJK SWING FOOTBRIDGE	NLD	RIJSWIJK (THE HAGUE)	MACHINEFABRIEK EMMEN	CABLE SYSTEM SUPPLY	2014
BAT BRIDGE	UK	NORFOLK	HV MARTIN	CABLE SUPPLY	2014

2014-2013

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
FOOTBRIDGE IN DRUMUL TABEREI	ROU	BUCHAREST	BBR ROMANIA	CABLE SYSTEM SUPPLY	2014
C475 GUYS FOR ELEVATED FLARES	CHN	SHANGAI	SAGEMIS INTERNATIONAL	CABLE SUPPLY	2014
KISA RADIOSTATION	SWE	KISA	TERACOM - SWEDEN	CABLE SUPPLY	2014
SENTECH MASTS FOR TELECOMMUNICATIONS	ZAF	SOUTH AFRICA	AMSTEELE SYSTEMS	STAY CABLE SUPPLY FOR MASTS	2014
ARCH BRIDGE	ITA	FRAMURA (SP)	MANGILI&ASSOCIATI	BRACING CABLE SUPPLY	2014
ARCH ROAD BRIDGES MILAN EXPO 2015	ITA	MILAN	CORDIOLI & C. SPA	CABLE SYSTEM SUPPLY AND INSTALLATION	2014
JAMBI STAYED CABLE FOOTBRIDGE	IND	JAMBI	PT. PALM SARANA	CABLE SYSTEM SUPPLY AND INSTALLATION	2014
BOTLEK LIFTING BRIDGE	NLD	ROTTERDAM	WAAGNER BIRO BRIDGE SYSTEM	CABLE SYSTEM SUPPLY	2014
TIMSAH ARENA (NEW BURSA STADIUM)	TUR	BURSA	MONTAGE SERVICE	CABLE SUPPLY AND MONTAGE SERVICE	2014
PEDESTRIAN BRIDGE OVER LABE RIVER	CZE	ČELÁKOVICE (PRAGUE)	METROSTAV A.S.	CABLE SYSTEM SUPPLY	2014
ADOMI BRIDGE	GHA	KPONG	MCE	CABLE SYSTEM SUPPLY FOR REHABILITATION WORKS	2014
LAS VEGAS HIGH ROLLER WHEEL	USA	LAS VEGAS	FREYSSINET FRANCE	CABLE SYSTEM SUPPLY	2014
TURIN TOWER - BANCA INTESA SAN PAOLO	ITA	TURIN	COMETAL	BRACING CABLE SYSTEM FOR THE MEGA-COLUMS INSTALLATON AND TENSIONING	2014
ARCH BRIDGE OVER AVERO RIVER	ITA	CHIAVENNA (SO)	OMBA S.P.A.	CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING	2013
ZOO	FRA	PARIS	HCB ENGINEERING	CABLE SYSTEM SUPPLY	2013
ARCH PEDESTRIAN BRIDGE	ITA	NOMI (TN)	C.M.M. F.LLI RIZZI	CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2013
FOOTBRIDGE	ITA	CINISELLO BALSAMO (MI)	IMPREGILO	CABLE SYSTEM SUPPLY AND INSTALLATION	2013
FUSSBALL FOOTBRIDGE	ITA	VALGARDENA	FACCHIN ENGINEERING	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2013
O. GRANILLO STADIUM	ITA	REGGIO CALABRIA	REGGINA CALCIO	CABLES MAINTENANCE	2013
PEDESTRIAN BRIDGE OVER OSKOL RIVER	RUS	OSKOL	SEVERSTAL	CABLE SUPPLY	2013
FOOTBRIDGE OVER N75	BEL	GENK	ANMECO	HDPE COVERED CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING	2013
KHARYAGA PLANT FLARE	RUS	KHARYAGA	SAMIA ITALIA	STAY CABLE SUPPLY FOR FLARE	2013
ARCH FOOTBRIDGE	RUS	ST. PETERSBURG	JSC SEVERSTAL-METIZ	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2013
SWIMMING POOL ROOF	ITA	MONFALCONE (GO)	ITAL-ENGINEERING	CABLE SUPPLY	2013
NAVY MILCON BRIDGE	BHR	MANAMA	CONTRACK / NASS JV	CABLE SYSTEM SUPPLY	2013
HEREFORD CONNECT 2 GREENWAY BRIDGE	UK	HEREFORD	BRAITHWAITE ENGINEERS LTD	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2013
GRAULHET FOOTBRIDGE	FRA	TARN	CONSTRUCTION SAINT ELOI	CABLE SUPPLY	2013
FOOTBRIDGE OVER AISNE RIVER	FRA	RETHEL	FREYSSINET FRANCE	SUPPLY OF THE CABLES AND THE CLAMPS	2013

2013-2012

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
TV ANTENNA	ESP	SPAIN	VIDEO MEDIOS	CABLE SUPPLY	2013
FOOTBRIDGE OVER RIO MAGGIORE RIVER	ITA	LIVORNO	METALCOSTRUZIONI	CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2013
THAON DE REVEL PEDESTRIAN LIFTING BRIDGE	ITA	LA SPEZIA	SIMAN	CABLE SYSTEM SUPPLY AND INSTALLATION	2013
PONT Y DDRAIG	UK	RHYL	DAWNUS CONSTRUCTION	CABLE SYSTEM SUPPLY AND INSTALLATION	2013
AL MINA'A STADIUM	IRQ	BASRAH	DALIAN GOLDEN SUN IMP. & EXP. CO.LTD	CABLE SYSTEM SUPPLY FOR ROOF CABLE NET STRUCTURE	2013
BIKE AND PEDESTRIAN ARCH BRIDGE OVER A27 HIGHWAY	ITA	CASALE SUL SILE (TV)	LMV SPA	HANGER CABLE SYSTEM SUPPLY	2013
SUSPENDED BRIDGE	RUS	SMOLENSK	SEVERSTAL METIZ	CABLE SUPPLY	2013
PEDESTRIAN BRIDGE	ZAF	ISANDO	AMSTEELE SYSTEMS	STAY CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2013
RADIO TOWER	NCL	NEW CALEDONIA	LE NICKEL - SLN	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2013
PANSPORT ARCH BRIDGES	UK	ELGIN	MACALLOY	HANGER CABLE SYSTEM SUPPLY	2013
PEDESTRIAN BRIDGE	RUS	NABEREZHNYE CHELNY	JSC SEVERSTAL-METIZ	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2013
ARCH BRIDGE OVER ARNO RIVER	ITA	FIGLINE VALDARNO (FI)	MAEG	HANGER CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING	2013
2 ARCH BRIDGES WD19 AND WD3 A4 FREEWAY	PRT	MOKRA	BBR POLSKA	HANGERS CABLES	2013
3 ARCH BRIDGES WD175, WD180 AND WD186, A1 MOTORWAY JUNCTION BRZEZIE AND JUNCTION KOWAL	POL	WLOCLAWEK	ATM-POLAND	HANGERS CABLES	2013
NIJMEGEN ARCH BRIDGE	NLD	NIJMEGEN	MAX-BÖGL	CABLE SYSTEM SUPPLY AND INSTALLATION	2013
VENT STACK	SAU	JEDDAH	FLAMEOUT	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2012
OUTLET CENTRE	UK	ASHFORD (KENT)	ARCHITEN LANDRELL	CABLE SYSTEM SUPPLY	2012
FLOWERS MARKET ROOF	ITA	PESCIA (PT)	COMUNE DI PESCIA	CABLES INSPECTION OF GUYED ROOF	2012
ABDALI BOULEVARD TENTS	JOR	AMMAN	ALI TAMIMI AND SONS	CABLE SYSTEM SUPPLY FOR MEMBRANE TENSOSTRUCTURE	2012
CONSOL ENERGY WINGTIP BOY SCOUT BRIDGE	USA	BECKLEY (WEST VIRGINIA)	FREYSSINET FRANCE	CABLE SYSTEM SUPPLY	2012
FOOTBRIDGE	UK	BALLYMONEY (NI)	M. HASSON AND SONS LTD	CABLE SYSTEM SUPPLY	2012
DECINES FOOTBRIDGE	FRA	LYON	FREYSSINET FRANCE	FOOTBRIDGE CABLE SYSTEM SUPPLY	2012
BEIRA RIO STADIUM	BRA	PORTO ALEGRE	HIGHTEX-GERMANY/ ANDREADE GUTIERREZ	CABLE SYSTEM SUPPLY	2012
ESTÁDIO NACIONAL MANÉ GARRINCHA	BRA	BRASILIA	ENTAP ENGENHARIA/ CONSTRUCOES LTDA	CABLE SYSTEM SUPPLY	2012
ARCH BRIDGE OF VISDOMINA STREET	ITA	MONTALETTO (RA)	NALDI CARPENTERIE SRL	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2012
QUEENSLAND CURTIS LNG PROJECT	AUS	QUEENSLAND	HAMWORTHY	STAY CABLE SUPPLY FOR FLARE SYSTEM	2012

2012-2011

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
VENT STACK	UK	BIRMINGHAM	FLAMEOUT	STAY CABLE SUPPLY	2012
ANCHOR SYSTEM	NLD	ROTTERDAM	MENNENS SCHIEDAM	HDPE SUPPLY CABLES	2012
KÅFJORD CABLE STAYED BRIDGE	NOR	KÅFJORD	STATENS VEGVESEN	CABLE SYSTEM SUPPLY AND INSTALLATION	2012
DALSFJORD SUSPENSION BRIDGE	NOR	DALE I SUNNFJORD	STATENS VEGVESEN	CABLE SYSTEM SUPPLY AND INSTALLATION	2012
DOUBLE ARCH BRIDGES MPZ42 OVER A4 HIGHWAY	POL	RADYMNO KORCZOWA	ATM-POLAND	CABLE SYSTEM SUPPLY	2012
FOOTBRIDGE	UK	MANCHESTER	MACALLOY	CABLE SUPPLY, INSTALLATION AND TENSIONING	2012
ARCH BRIDGE WD18 OVER S3 EXPRESSWAY	POL	MIĘDZYRZECZ	ATM-POLAND	CABLE SYSTEM SUPPLY	2012
DROVERS ROUNDABOUT (M20 JUNCTION 9)	UK	KENT	MABEY BRIDGE LTD	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2012
ROAD ARCH BRIDGE OVER OMBRONE RIVER	ITA	PRATO	GIOVANNINI COSTRUZIONI	HANGER CABLES, INSTALLATION ASSISTANCE AND TENSIONING	2012
SETTIMIA SPIZZICHINO ARCH BRIDGE	ITA	ROME	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	2012
ARCH BRIDGE OVER VINALOPO RIVER	ESP	ELCHE	RONDA SUR DE ELCHE UTE	HANGER CABLES, INSTALLATION AND TENSIONING	2012
ROAD ARCH BRIDGE	AUT	BRUCK AN DER MUR	NCA	HANGER CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2012
ITAIPAVA ARENA FONTE NOVA	BRA	SALVADOR	MARTIFER	CABLE SYSTEM SUPPLY AND INSTALLATION ASSISTANCE	2012
HOVENRING STAYED CIRCULAR FOOTBRIDGE	NLD	EINDHOVEN	VICTOR BUYCK STEEL CONSTRUCTION	CABLE SYSTEM SUPPLY	2012
ANAKLIA CABLE STAYED FOOTBRIDGE	GEO	ANAKLIA	CAUCASUS ROAD PROJECT	CABLE SYSTEM SUPPLY AND INSTALLATION	2012
TOLLBOOTH CANTILEVER ROOF	ITA	MANERBIO (BS)	SILAR	STAY CABLE SYSTEM SUPPLY, INSTALLATION AND TENSIONING	2011
PIPE RACK OVER ARNO RIVER	ITA	AREZZO	ENTE IRRIGUO UMBRO TOSCANO	CABLE INSPECTION AND MAINTANANCE	2011
ÄLVSBORG BRIDGE	SWE	GOTHENBURG	SPENCER	CABLE SYSTEM SUPPLY AND TOPOGRAPHIC SURVEY	2011
FLARE	ARG	BUENOS AIRES	HAMWORTHY	STAY CABLE SUPPLY FOR FLARE (HITT-1635)	2011
ASYMMETRIC FOOTBRIDGE OF CITY PARK	ITA	PADUA	MARTINELLI AGOSTINO	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2011
FOOTBRIDGE	ITA	CONTRON (PN)	COS.ME.	CABLE SUPPLY, INSTALLATION AND TENSIONING ASSISTANCE	2011
NETANYA STADIUM	ISR	NETANYA	HAGIVA YH	CABLE SYSTEM SUPPLY AND INSTALLATION	2011
SUSPENSION BRIDGE OVER SERIO RIVER	ITA	SERIATE (BG)	CARPENTERIE GHIDOTTI	SUSPENSION, STABILISING AND HANGERS CABLES. INSTALLATIONS AND TENSIONING ASSISTANCE.	2011
ARCH BRIDGES WD7 AND WD8	POL	PABIANICE	INTOP - ATM	HANGERS CABLES	2011
CANOPIED STAGE OPERA LESNA	POL	SOPOT	TAYIO EUROPE	MEMBRANE ARCH ROOF, STAY CABLES	2011

2011-2009

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
ABDALI BOULEVARD TENTS	JOR	AMMAN	ALI TAMIMI & SONS	CABLE SYSTEM FOR MEMBRANE TENT	2011
STAYED FOOTBRIDGE KIFISIAS AVENUE	GRC	ATHENS	AKTOR	STAY CABLES AND STAY MONITORING SYSTEM	2011
STAYED M20 FOOT/ CYCLE BRIDGE JUNCTION 9 AND DROVERS ROUNDABOUT	UK	DROVERS	MACALLOY	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2011
ÄLVSBORG ROAD BRIDGE	SWE	GOTHENBURG	C. SPENCER	HANDRAIL CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2011
PEDESTRIAN STAYED BRIDGE	UK	HEMEL HEMPSTEAD	SH STRUCTURES	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2011
OLYMPIC BMX STADIUM	UK	MANCHESTER	MACALLOY	STAYED ROOF, STAY AND ANCHOR CABLES	2010-2011
PGE NARODOWY NATIONAL STADIUM	POL	WARSAW	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	2010-2011
ALLIANZ STADIUM (JUVENTUS STADIUM)	ITA	TURIN	FIP INDUSTRIALE	CABLE SYSTEM SUPPLY AND INSTALLATION	2010-2011
ARCH ROAD BRIDGE OVER MIÑO RIVER	ESP	LUGO	FCC	HANGERS CABLES	2010-2011
BC PLACE VANCOUVER STADIUM	CAN	VANCOUVER	FREYSSINET INTERNATIONAL	CABLE SYSTEM SUPPLY	2010-2011
FØRSØDDIN SUSPENSION FOOTBRIDGE	NOR	LEIRA	HMR VOSS	MAIN CABLES	2010
SUSPENSION FOOTBRIDGE	ITA	CONTRON (PN)	COS.ME.	SUSPENSION, STABILISING AND HANGERS CABLES. INSTALLATIONS AND TENSIONING ASSISTANCE	2010
TENTS OVER JAMARAAT BRIDGE	SAU	MINA	ALI TAMIMI & SONS	MEMBRANE STAYED ROOF, STAY CABLES	2010
STAYED ROAD BRIDGE	MOZ	TETE	ICQ	HANGERS CABLES SUBSTITUTION, INSTALLATION AND TENSIONING ASSISTANCE	2010
ROAD ARCH BRIDGE DAMBOVITA RIVER	ROU	BUCHAREST	ASTALDI - FCC	HANGERS CABLES	2010
PEDESTRIAN STAYED BRIDGE OVER SECCHIA RIVER	ITA	SASSUOLO (MO)	CISAF	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2010
KRAKÓW PEDESTRIAN ARCH BRIDGE	POL	KRAKÓW	INTOP - ATM	CABLE SYSTEM SUPPLY	2010
NECKARBRUKE STAYED ROAD BRIDGE	DEU	ZWINGENBERG AM NECKAR	MCE-SMB	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2010
STAYED FOOTBRIDGE	ITA	CINISELLO BALSAMO (MI)	CARPENFER ROMA	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2010
TEMPORARY ROAD BRIDGE OVER PO RIVER	ITA	PIACENZA	CIMOLAI S.P.A.	FLOATING BRIDGE, MOORING CABLES	2010
STAYED FOOTBRIDGE	ITA	AOSTA	OMC	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2009
JAGIELLONSKA ARCH FOOTBRIDGE	POL	WARSAW	INTOP - ATM	HANGERS CABLES	2009
AUDITORIUM OSCAR NIEMEYER	ITA	RAVELLO (NA)	PACO COSTRUZIONI	BRACINGS SYSTEM	2009
FOOTBRIDGE OVER SIEVE RIVER	ITA	FLORENCE	HABITAT LEGNO	STAY CABLES	2009
SHIPLOADER	AUS	PERTH	SANDVIK MINING AUSTRIA	BOOM SUSPENSION CABLES	2009

2009-2008

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
NEW TREVISO DISTRICT HEAD OFFICE	ITA	TREVISO	SETTEN	TENDON CABLE SYSTEM	2009
YAS MARINA CIRCUIT	UAE	ABU DHABI	TAYIO EUROPE GMBH	CABLE SYSTEM SUPPLY	2009
SUSPENSION FOOTBRIDGE	MNE	PODGORICA	INTER-MOST AD	MAIN CABLES, HANGERS AND CLAMPS	2009
CLARKSLANE FOOTBRIDGE	NZL	AUCKLAND	HEB CONSTRUCTION	STAYED FOOTBRIDGE. HDPE SHEATH PROTECTED STAY CABLES	2009
ROAD BRIDGE	ITA	LUCCA	EDILSTEEL	CABLE STAYED BRIDGE, STAY CABLES	2009
"PONTE DEL MARE" CABLE STAYED FOOTBRIDGE	ITA	PESCARA	PICHLER	CABLE SYSTEM SUPPLY AND INSTALLATION	2009
STAYED DRAWBRIDGE	ITA	LA SPEZIA	S.I.M.A.N.	STAY CABLES AND INSTALLATION ASSISTANCE	2009
ZAGREB SPORT ARENA	HRV	ZAGREB	BBR CONNEX	CABLE SYSTEM SUPPLY AND INSTALLATION	2008-2009
KHAN SHATYR ENTERTAINMENT CENTRE	KAZ	ASTANA	MONTAGE SERVICE	CABLE SYSTEM SUPPLY	2008-2009
COLLEGEBRUG STAYED AND SUSPENSION FOOTBRIDGE	BEL	KORTRIJK	ANMECO	CABLE SYSTEM SUPPLY AND INSTALLATION	2008
STAYED FOOTBRIDGE	ITA	GOITO (MN)	GED	STAY CABLES AND INSTALLATION ASSISTANCE	2008
TELECOM-TV ANTENA	ITA	PENICE (PC)	LIBERTÀ PIACENZA	CABLE STAYED ANTENA INSPECTION AND MAINTENANCE	2008
SUSPENSION FOOTBRIDGE	ITA	PLAN DI MEDUNA (PN)	IMPRESA PREVEDELLO ISIDORO	SUSPENSION AND STABILISING CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2008
NCIG OPERATING MACHINE	AUS	PERTH	SANDVIK	BOOM SUSPENSION CABLE	2008
CAPE LAMBERT OPERATING MACHINE	AUS	PERTH	SANDVIK	BOOM SUSPENSION CABLE	2008
STAYED FOOTBRIDGE	ITA	CASALECCHIO (BO)	ORTOLAN	STAY CABLES	2008
MOTORWAY TERMINAL ROOF	ITA	RONCHIS (UD)	ORTOLAN	ROOF STAY CABLE SYSTEM	2008
ARCH BRIDGE M50	IRL	DUBLIN	THOMPSON STRUCTURE	SUSPENSION HANGERS SYSTEM	2008
ROAD ARCH BRIDGE	ITA	ZAMBANA (TN)	CORDIOLI & C. SPA	TENDON HANGERS	2008
BROCKMAN OPERATING MACHINE	AUS	PERTH	SANDVIK	BOOM SUSPENSION CABLE	2008
SPORT HALL	ITA	BIELLA	EDILCENTRO	ROOF STAY CABLE SYSTEM	2008
FARE STAYS	ITA	SANNAZZARO DE BURGONDI	DEMONT	TENSIONING SUPERVISION AND ASSISTANCE	2008
SUSPENSION FOOTBRIDGE OVER RIO MIÑO	ESP	LUGO	MEKANO 4	MAIN AND HANGERS CABLES	2008
WARATAH II-III-IV OPERATING MACHINE	AUS	PERTH	SANDVIK	BOOM SUSPENSION CABLE	2008
SUSPENSION FOOTBRIDGE	ITA	ALBOSAGGIA (SO)	TENSOSPAZIO	SUPPORTING AND STABILISING CABLES	2008
TENSOSTUCTURE BUILDING COVERING	ITA	BOLOGNA	METALSTRUTTURE	HORIZONTAL BRACINGS	2008
HIPPODROME GRANDSTAND ROOF	ITA	MODENA	SOCIETÀ MODENESE	INSPECTION AND MAINTENANCE	2008

2008-2006

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
ZARAGOZA EXPO 2008 SHADE STRUCTURE	ESP	ZARAGOZA	IASO	CABLE SYSTEM SUPPLY	2008
DE LA ALZAMORA FOOTBRIDGE - RIO EBRO	ESP	ZARAGOZA	FCC	STAY CABLES	2008
STAYED FOOTBRIDGE	ITA	IMOLA (BO)	GED	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2008
STAYED ROAD BRIDGE	ITA	TRENT	CORDIOLI & C. SPA	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2007-2008
SUSPENDED BUILDING	ITA	TRENT	PREMETAL	SUSPENDED BUILDING, STAY CABLES	2007-2008
FOOTBRIDGE OVER A13 MOTORWAY	ITA	BOLOGNA	SIPAL	CABLE SYSTEM SUPPLY AND INSTALLATION	2008
BOLOGNA FAIR ROOF	ITA	BOLOGNA	MERO ITALIANA	ROOF CABLE SYSTEM, INSTALLATION AND TENSIONING ASSISTANCE	2007-2008
ÄLVSBORG ROAD BRIDGE	SWE	GOTHENBURG	VAGVERKET REGION VAST	SUSPENSION BRIDGE, NEW HANGERS	2007-2008
THE CHORDS BRIDGE	IL	JERUSALEM	KOOR METALS	CABLE SYSTEM SUPPLY AND INSTALLATION	2007-2008
ZUID-WILLELMSVAART CABLE STAYED FOOTBRIDGE	BEL	DILSEN-STOKKEM	IEMANTS	CABLE SYSTEM SUPPLY AND INSTALLATION	2007
EDITORIALE LIBERTÀ STAY ROOF	ITA	PIACENZA	CIB CARPENTERIA INDUSTRIALE BRESCIANA	ROOF CABLE SYSTEM	2007
STAYED ROOF	ITA	CESENA	MOBILIFICIO LUCCHI	STAY CABLES SUBSTITUTION	2007
RADIO MAST SCOTLAND	UK	CRIMOND	RIGOUT	STAY CABLES	2007
ROAD ARCH BRIDGE	ITA	EGNA ORA (TN)	GIUGLIANO COSTRUZIONI	HDPE SHEATH HANGERS	2007
FLARE STAYS	ITA	ROME	CESTARO ROSSI	INSPECTION AND MAINTENANCE	2007
FABIAN WAY BRIDGE	UK	SWANSEA	CITY AND COUNTY OF SWANSEA	STAY CABLES, INSTALLATION AND TENSIONING ASSISTANCE	2007
PEDESTRIAN BRIDGE	GEO	UREKI	ELITA BURJI	SUSPENSION FOOTBRIDGE, CABLE SYSTEM	2007
MADRID FAIR	ESP	MADRID	WAAGNER BIRO	ARCH CHAIN TENSOSTRUCTURES, CABLE SYSTEM	2007
ROAD BRIDGE OVER THE GUADALQUIVIR RIVER	ESP	CORDOBA	FCC, CONTRUCCION	ARCH BRIDGE, HANGER	2007
PEDESTRIAN BRIDGE	ITA	SEGRATE (MI)	SONNANTE	CABLE STAYED FOOTBRIDGE, STAY CABLES	2007
UNIVERSITY FOOBRIDGE	ESP	TOLEDO	ICQ	CABLE SYSTEM SUPPLY	2007
ROAD BRIDGE	ITA	LUCCA	ORTOLAN COSTRUZIONI	ARCH BRIDGE, HANGER CABLES	2006-2007
FLOATING ROAD BRIDGE	CAN	VICTORIA, B.C.	WESCO INDUSTRIES	FLOATING BRIDGE, HDPE SHEATH PROTECTED MOORING CABLES	2006-2007
UNIVERSITY FOOTBRIDGE	IRL	LIMERICK	HCB	SUPPORTED FOOTBRIDGE, CABLE SYSTEM	2006-2007
FOOTBRIDGE	ITA	BEINASCO (TO)	EDILSTEEL	CABLE STAYED FOOTBRIDGE, STAY CABLES	2006
MGDR FACTORY	ITA	TURIN	GEODIS IMMOBILIARE	CABLE STAYED ROAD BRIDGE, STAY CABLES, INSPECTION AND MAINTENANCE	2006

2006-2005

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
SQUARE COVERING	ITA	GENOA	PDR	CABLE STAYED COVERING, MAINTENANCE	2006
ENI TORCH TOWER	ITA	SANNAZZARO (PV)	ENI	CABLE STAYED TOWER, MAINTENANCE	2006
TRANSMITTING ANTENNA	UK	VALE OF GLAMORGAN	RIGOUT	TRANSMITTING STATION ANTENNA, STAY CABLES	2006
FOOTBRIDGE	GRC	PIRAEUS	PROBETON ERGOTECHNIKI	CABLE STAYED FOOTBRIDGE, STAY CABLES	2006
MEMBRANE PIER ICHNUSA	ITA	CAGLIARI	CANOBBIO	MEMBRANE STAYED ROOF, STAY CABLES	2006
PEDESTRIAN BRIDGE	ITA	UDINE	COS.ME.	CABLE STAYED FOOTBRIDGE, STAY CABLES	2006
GYMNASIUM	ITA	MONTEPULCIANO (SI)	CARPEM	CABLE STAYED ROOF, STAY CABLE SYSTEM	2006
PEDESTRIAN BRIDGE, ROME EXPOSITION	ITA	ROME	COMETAL	FOOTBRIDGE HANGER	2006
CARACAS RAILWAY STATION ROOF	VEN	CARACAS	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY	2006
MUNICIPAL STADIUM OF BRAGA	PRT	BRAGA	ASSOC-SOARES DA COSTA	INSPECTION AND MAINTENANCE	2006
R-3 PEDESTRIAN BRIDGE	ESP	MADRID	MEKANO 4	CABLE SYSTEM SUPPLY	2006
M-40 PEDESTRIAN BRIDGE	ESP	MADRID	MEKANO 4	CABLE STAYED FOOTBRIDGE, STAY CABLES	2006
MEMBRANE EXPOSITION PAVILION	ITA	BARI	ITALCOVER	BOUNDARY AND ANCHOR CABLES	2005-2006
PEDESTRIAN BRIDGE	BEL	KARJALY	SAVARONA	SUSPENSION FOOTBRIDGE, MAIN, STABILISING AND HANGER CABLES	2005-2006
SESTRIERE OLYMPIC PEDESTRIAN BRIDGE	ITA	SESTRIERE (TO)	COSTRADE	CABLE SYSTEM SUPPLY AND INSTALLATION	2005-2006
ARCH ROAD BRIDGE	ITA	PIEVE DI SOLIGO (TV)	ORTOLAN COSTRUZIONI	DOUBLE ARCH BRIDGE, HANGER CABLES	2005-2006
N° 2 ROAD BRIDGES	ITA	REGGIO EMILIA	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	2005-2006
REGGIO EMILIA ROAD BRIDGE	ITA	REGGIO EMILIA	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY AND INSTALLATION	2005-2006
TURIN OLYMPIC FOOTBRIDGE	ITA	TURIN	ATI/SERMECA - FALCONE	CABLE SYSTEM SUPPLY AND INSTALLATION	2005-2006
RIMINI EXHIBITION PAVILIONS	ITA	RIMINI	RIMINI FIERA	ARCH CHAINS TENSOSTRUCTURES, CABLE CHAINS	2005-2006
PEDESTRIAN BRIDGE	ITA	FORTEZZA (BZ)	HOLZBAU	SUSPENSION REINFORCEMENT, CHATENARY CABLE SYSTEM	2005
PEDESTRIAN BRIDGE OVER TOPINO RIVER	ITA	FOLIGNO (PG)	DELL'ACQUA COSTRUZIONI GENERALI	ARCH FOOTBRIDGE, HANGER CABLES	2005
PEDESTRIAN BRIDGE	ITA	BUSTO ARSIZIO (VA)	COESTRA	CABLE STAYED FOOTBRIDGE, STAY CABLES	2005
MUNICIPAL STADIUM OF BRAGA	PRT	BRAGA	SOARES DA COSTA	INSPECTION AND MAINTENANCE	2005
EXHIBITION PAVILIONS	PRT	LAGOS	ICQ	ARCH CHAINS TENSOSTRUCTURES, CABLE CHAINS	2005
MALABO STADIUM	GNQ	MALABO	H.C.B. - BOUYGUES INTERNATIONAL	TENSOSTRUCTURE CABLE SYSTEM	2005

2005-2004

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
ARCH ROAD BRIDGE	FRA	ANGOULEME	H.C.B. JOSEPH PARIS	ARCH BRIDGE, HDPE SHEATH PROTECTED HANGER CABLES	2005
AESTHETIC FACADE	FRA	CLERMONT FERRAND	H.C.B. - SERAM	HDPE SHEATH PROTECTED CABLES FOR GLASS CURTAIN ROAD	2005
BORMIO PEDESTRIAN BRIDGE	ITA	BORMIO (SO)	G.A.L.	CABLE SYSTEM SUPPLY AND INSTALLATION	2005
RIVER WEIR-FILTER	ITA	SARCHE (TN)	CO.GEN.	CABLE SYSTEM SUPPLY AND INSTALLATION	2005
SPORT HALL	ITA	MONTEPULCIANO (SI)	CARPEM	STAYED ROOF - STAY CABLES	2005
ST. PANCRAS STATION LIGHTING SYSTEM	UK	LONDON	MACALLOY - ENTECH	CATENARY CABLES FOR LIGHTING SYSTEM	2005
PEDESTRIAN BRIDGE	ESP	FUENGIROLA	MEKANO 4	CABLE STAYED FOOTBRIDGE, STAY CABLES	2005
FOOTBRIDGE	ITA	VALDIERI (CN)	PARCO NATURALE ALPI MARITTIME	SUSPENSION FOOTBRIDGE, MAIN AND STABILISING CABLES	2005
REPERE SIGNAL OLYMPIQUE	FRA	PARIS	H.C.B. - EIFFEL	TEMPORARY MAST FOR OLYMPIC EXIBITION	2005
INSPECTION ELEVATOR	ITA	SAN POLO DI PIAVE (TV)	SBS	AERIAL PLATFORM, SUSPENSION AND STABILISING CABLES	2005
THE LONDON EYE	UK	LONDON	HOLLANDIA	WHEEL CABLE SYSTEM, INSPECTION	2005
CAMMI STAYED ROOF	ITA	CALVISANO (BS)	CERIALI COSTRUZIONI	CABLE STAYED ROOF, STAY CABLE SYSTEM	2004-2005
SWIMMING POOL ROOF	ITA	SEGRATE (MI)	LA GEN	PLANE TENSOSTRUCTURES, CABLES MAINTENANCE	2004-2005
PEDESTRIAN BRIDGE	ITA	TRENT	CARPENTERIE ROTALIANE 2	SUSPENSION FOOTBRIDGE, MAIN AND HANGER CABLES	2004-2005
PEDESTRIAN BRIDGE	ITA	VENZONE (UD)	L'ELETTROTECNICA S.C.A.R.L.	SUSPENSION FOOTBRIDGE, MAIN, STABILISING AND HANGER CABLES	2004-2005
PEDESTRIAN BRIDGE	ITA	TREVISO	ORTOLAN COSTRUZIONI	CABLE STAYED FOOTBRIDGE, STAY CABLES	2004
MEMBRANE EXPOSITION PAVILION	ITA	BARI	ITALCOVER	PLANE TENSOSTRUCTURES, CABLES	2004
TORCH TOWER	NLD	DONGEN	MENNENS DONGEN B.V.	CABLE STAYED TOWER, GUY CABLES	2004
PEDESTRIAN BRIDGE	ITA	VALBREMBO (BS)	PANDINI	SUSPENSION FOOTBRIDGE, MAIN CABLES	2004
CARRARA EXHIBITION PAVILIONS	ITA	CARRARA	I.M.M.C.	PLANE ROOF TENSOSTRUCTURES, INSPECTIONS	2004
FACADE	ITA	MILAN	ITALCABLES	GLASS CURTAIN WALL CABLES	2004
SPORT HALL ROOF	ITA	TRIVERO (BI)	TENSOSPAZIO	PLANE TENSOSTRUCTURES, CABLES	2004
ROME OLYMPIC STADIUM	ITA	ROME	IMAC	SPACE TENSOSTRUCTURE, CABLE SYSTEM INSPECTION	2004
SUSPENSION PIPE WATER	ITA	AREZZO	F.LLI AGUZZI - COINT	SUSPENSION CATENARY CABLE SYSTEM, MAINTENANCE	2004
PEDESTRIAN BRIDGE	ITA	PIOSSASCO (TO)	LA FONDAZIONE	SUSPENSION REINFORCEMENT CATENARY CABLE SYSTEM	2004

2004-2002

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
TORCH TOWER	ITA	CUPELLO (CH)	STOGIT	CABLE STAYED TOWER, MAINTENANCE	2004
TORCH TOWER	ITA	MINERBIO (BO)	STOGIT	CABLE STAYED TOWER, MAINTENANCE	2004
ROAD BRIDGE	ITA	MALIZIA (SI)	TECNOSTEEL	ARCH BRIDGE, HANGER CABLES	2004
THE LONDON EYE	UK	LONDON	HOLLANDIA	WHEEL CABLE SYSTEM, INSPECTION	2004
SUMMER PAVILION	ITA	CASTANO PRIMO (MI)	EDIL SERIO	PLANE TENSOSTRUCTURES, CABLES	2004
SWIMMING POOL ROOF	ITA	BOLOGNA	ISPA	PLANE TENSOSTRUCTURES, ROOF CABLES	2004
RIMINI EXIBITION PAVILIONS	ITA	RIMINI	EUROHOLZ	ARCH CHAINS TENSOSTRUCTURES	2004
SWIMMING POOL ROOF	ITA	CORNAREDO (MI)	TENSOSPAZIO ITALIA	PLANE TENSOSTRUCTURES, CABLES	2004
SUSPENDED OFFICES	ITA	BUSSOLENGO (VR)	LMV	SUSPENDED BUILDING, STAY CABLES	2004
ZOUTHAVEN FOOTBRIDGE	NLD	AMSTERDAM	BAM-SS	CABLE SYSTEM SUPPLY AND INSTALLATION	2004
PEDESTRIAN BRIDGE	ITA	BEINASCO (TO)	MO.SPE.CA.	CABLE STAYED FOOTBRIDGE, STAY CABLES	2004
SAN SALVADOR SCULPTURE	PRT	MATOSINHOS	ICQ	CABLE SYSTEM SUPPLY AND INSTALLATION ASSISTANCE	2004
ORTISEI PEDESTRIAN BRIDGE	ITA	ORTISEI (BZ)	PICHLER	CABLE SYSTEM SUPPLY AND INSTALLATION	2004
PEDESTRIAN BRIDGE	ITA	FARRA D'ALPAGO (BL)	HOLZBAU	CABLES STAYED PEDESTRIAN BRIDGE, STAY CABLES	2004
CATENARIES LIGHTING SYSTEM	ITA	TURIN	CTE - SIFEL	MAIN CABLES, SECONDARY CABLES AND HANGERS SYSTEM	2004
SPIDERNET FOR OLYMPIC STADIUM	GRC	ATHENS	ELEMKA SA	ROPE NET, CABLE SYSTEM	2003-2004
ATHENS OLYMPIC STADIUM	GRC	ATHENS	CIMOLAI S.P.A.	CABLE SYSTEM SUPPLY	2003-2004
BENNEBROEKERWEG ROAD BRIDGES	NLD	HAARLEMMERMEER	VICTOR BUYCK STEEL CONSTRUCTION	TWO CABLE STAYED BRIDGES, STAY CABLES	2003-2004
TOOLENBURG WALKWAY AND ROAD BRIDGES	NLD	HAARLEMMERMEER	VICTOR BUYCK STEEL CONSTRUCTION	TWO CABLE STAYED BRIDGES, STAY CABLES	2003-2004
NIEUW VENNEP ROAD BRIDGE	NLD	HAARLEMMERMEER	VICTOR BUYCK STEEL CONSTRUCTION	CABLE SYSTEM SUPPLY	2003-2004
SWIMMING POOL ROOF	ITA	TRAVAGLIATO (BS)	TENSOSPAZIO ITALIA	PLANE TENSOSTRUCTURES, CABLES	2003
ROAD BRIDGE	ITA	VILLANOVA D'ALBENGA (SV)	MONSUD	CABLE STAYED BRIDGE, STAY CABLES	2002-2003
MUNICIPAL STADIUM OF BRAGA	PRT	BRAGA	ASSOC-SOARES DA COSTA	CABLE SYSTEM SUPPLY AND INSTALLATION	2002-2003
CHIMNEYS	ITA	COLLEFERRO (RM)	PIANIMPIANTI	CABLE STAYED CHIMNEYS, STAY CABLES	2003
THE LONDON EYE	UK	LONDON	HOLLANDIA	WHEEL CABLE SYSTEM, INSPECTION	2003
PEDESTRIAN BRIDGE	ITA	CORSICO (MI)	COMUNE DI CORSICO	CABLE STAYED BRIDGE, STAY CABLES	2003
PEDESTRIAN BRIDGE	ITA	BOCENAGO (TN)	PICHLER	CABLE STAYED FOOTBRIDGE, STAY CABLES	2002

2002-2001

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
TORCH TOWER	ITA	DOMODOSSOLA (VB)	SICES	CABLE STAYED TOWER, STAY CABLES	2002
GLASS FACADE	ITA	BIANCADE (TV)	REFLEX	CABLES FOR GLASS FACADE	2002
FORLANINI STAYED FOOTBRIDGE	ITA	MILAN	PROFACTA	CABLE STAYED FOOTBRIDGE, STAY CABLES, INSPECTION AND MAINTENANCE	2002
RIMINI EXHIBITION PAVILIONS	ITA	RIMINI	RIMINI FIERA	ARCH CHAINS TENSOSTRUCTURES, INSPECTION, RETENSIONING	2002
TORCH TOWER	ITA	SABBIONCELLO (FE)	ENI-AGIP	CABLE STAYED TOWER, MAINTENANCE	2002
TORCH TOWER	ITA	CORTEMAGGIORE (PC)	ENI-AGIP	CABLE STAYED TOWER, MAINTENANCE	2002
IMAX CINEMA	ITA	CASTELLANETA MARINA (TA)	METALMECCANICA DI FONZO	CABLE STAYED ROOF, STAY CABLES	2002
PIPELINE BRIDGE	ITA	BONDENO (FE)	COOPCOSTRUTTORI	CABLE STAYED BRIDGE, STAY CABLES	2002
RIO MANZANARES M-30 FOOTBRIDGE	ESP	MADRID	FCC	CABLE STAYED FOOTBRIDGE, STAY CABLES	2002
MARINAFIERA 1 FAIR	ITA	GENOA	FALCONE	CABLE STAYED ROOF, STAY CABLES	2002
BERGAMO FAIR	ITA	BERGAMO	FIERA	ARCH CHAIN TENSOSTRUCTURES, CABLE SYSTEM	2002
ROME OLYMPIC STADIUM	ITA	ROME	IMAC	SPACE TENSOSTRUCTURE, CABLE SYSTEM INSPECTION	2002
THE LONDON EYE	UK	LONDON	HOLLANDIA	WHEEL CABLE SYSTEM INSPECTION	2002
CHURCH ROOF	ITA	LOANO (SV)	PARROCCHIA S. PIO X	ROOF PLANE TENSOSTRUCTURES RETENSIONING	2002
DELLE ALPI STADIUM	ITA	TURIN	TORINO MUNICIPALITY	SPACE TENSOSTRUCTURE INSPECTION, MONITORING AND MAINTENANCE	2002
PEDESTRIAN BRIDGE	FRA	BLAGNAC	HCB	CABLE STAYED FOOTBRIDGE, STAY CABLES	2002
PEDESTRIAN BRIDGE	FRA	SAINT MARTIN	HCB	CABLE STAYED FOOTBRIDGE, STAY CABLES	2002
ROAD BRIDGE	ITA	GORGONZOLA (MI)	ALFA SOGEMI	CABLE STAYED BRIDGE, STAY CABLES	2002
PEDESTRIAN BRIDGE	ITA	COMO	CERRI	CABLE STAYED FOOTBRIDGE, STAY CABLES	2002
HANAPPI STADIUM STAND ROOF	AUT	WIEN	ZEMAN	ROOF TENSOSTRUCTURE CABLES	2002
GLASS FACADE	ITA	VENARIA (TO)	ED.AR.T.	CABLE FOR GLASS FACADE	2002
PEDESTRIAN BRIDGE	ITA	GRESSAN (AO)	CHENEVIER	CABLE STAYED FOOTBRIDGE, STAY CABLES	2001-2002
SWIMMING POOL ROOF	ITA	OGGIONO (LC)	ALBERGHI BRIANTEI	CABLE STAYED ROOF, STAY CABLES	2001-2002
STADIUM STAND ROOF	ITA	REGGIO CALABRIA	REGGIO CALABRIA MUNICIPALITY	CABLE STAYED ROOF, INSPECTION, RETENSIONING AND MAINTENANCE	2001
STADIO BRIANTEO STAND ROOF	ITA	MONZA	MONZA CALCIO	SPACE TENSOSTRUCTURE, INSPECTION AND MAINTENANCE	2001
PEDESTRIAN BRIDGE	NLD	CARNISSELANDEN	HBG	CABLE STAYED FOOTBRIDGE, STAY CABLES	2001

2001-1999

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
DELLE ALPI STADIUM	ITA	TURIN	TORINO MUNICIPALITY	SPACE TENSOSTRUCTURE INSPECTION, MONITORING AND MAINTENANCE	2001
REINFORCED CONCRETE ARCH FRAME	ITA	ANZIO (RM)	COLGATE PALMOLIVE	EXTERNAL REINFORCEMENT PRESTRESSING CABLES	2001
GLASS ROOFING	ITA	VENICE	MAEG	CABLES FOR STAYED AND SUSPENSION TENSOSTRUCTURE	2001
WORLD CYCLING CENTRE VELODROME	CHE	AIGLE	SEELE	CABLE SYSTEM SUPPLY	2001
SOEVEREIN ARENA	BEL	LOMMEL	CSM	CABLE SYSTEM SUPPLY AND INSTALLATION	2001
NEW RIMINI EXIBITION PAVILIONS	ITA	RIMINI	IMPREGILO	ARCH CHAINS TENSOSTRUCTURES	2000-2001
PEDESTRIAN BRIDGE	ITA	SPIAZZO (TN)	PRE METAL	CABLE STAYED FOOTBRIDGE, STAY CABLES	2000-2001
PARTY AREA COVERING	ITA	CASTANO PRIMO (MI)	PIZZI	PLANE TENSOSTRUCTURES	2000-2001
LESE RIVER BRIDGE	ITA	CASTELSILANO (KR)	COGES	HANGER CABLES FOR ARCH SUSPENDED BRIDGE	2000-2001
PIAZZA BUCINTORO	ITA	VENICE	MAJOR COSTRUZIONI	STAY CABLES FOR SPACE STRUCTURE	2000-2001
PALAPANINI SPORT HALL	ITA	MODENA	FONTANA	EXTERNAL REINFORCING CABLES FOR STEEL TRUSSES	2000
GRANDE BIGO	ITA	GENOA	PORTO ANTICO GENOVA	SPACE STAYED STRUCTURE INSPECTION AND MAINTENANCE	2000
GYMNASIUM	ITA	CILAVEGNA (PV)	CILAVEGNA MUNICIPALITY	ROOF, PLANE TENSOSTRUCTURES, RETENSIONING	2000
DELLE ALPI STADIUM	ITA	TURIN	TORINO MUNICIPALITY	SPACE TENSOSTRUCTURE, RETENSIONING AND SPECIAL MAINTENANCE	2000
FACTORY BUILDING	ITA	CENTURIPE (EN)	LA PROMETEC	MULTISPAN PLANE TENSOSTRUCTURES, CABLE SYSTEM	2000
DEUTSCHE BANK BUILDING	ITA	MILAN	LEONI	CABLE STAYED ROOF, STAY CABLES	2000
TORCH TOWER	ITA	CASALE CREMASCO (CR)	ENI	CABLE STAYED TOWER, INSPECTION AND MAINTENANCE	2000
TORCH TOWER	ITA	SANNAZZARO (NO)	SAMIA	CABLE STAYED TOWER, INSPECTION AND MAINTENANCE	2000
PIPELINE BRIDGE	ITA	LARDERELLO (SI)	SOCIETÀ CHIMICA LARDERELLO	SUSPENSION BRIDGE, INSPECTION	2000
GYMANSIUM ROOF	ITA	DESENZANO (BS)	DESENZANO MUNICIPALITY	SPACE TENSOSTRUCTURE, SPECIAL INSPECTION AND MAINTENANCE	2000
REINFORCED CONCRETE ARCH FRAME	ITA	ANZIO (RM)	COLGATE PALMOLIVE	EXTERNAL REINFORCEMENT CABLES	1999
TORCH TOWER	ITA	ROME	RAFFINERIE DI ROMA	CABLE STAYED TOWER INSPECTION AND MAINTENANCE	1999
RIVER EBRO BRIDGE	ESP	CASTEJON	DRACE	CABLE STAYED BRIDGE STAY CABLES REPLACEMENT	1999
SWIMMING POOL ROOF	ITA	BRESCIA	TENSOSPAZIO ITALIA	PLANE TENSOSTRUCTURES CABLES	1999
PEDESTRIAN BRIDGES	ITA	CESANO MADERNO (MB)	OLMET	CABLE STAYED BRIDGES STAY CABLES	1999

1999-1997

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
ROME OLYMPIC STADIUM	ITA	ROME	IMAC	SPACE TENSOSTRUCTURE INSPECTION	1999
MALPENSA 2000 CARGO CITY STAYED ROOF	ITA	MALPENSA AIRPORT CARGO CITY	OFFICINE TOSONI	CABLE STAYED ROOF STAY CABLE SYSTEM	1999
STADIUM STAND ROOF	ITA	REGGIO CALABRIA	FERROCEMENTO CONDOTTE	CABLE STAYED ROOF STAY CABLE SYSTEM	1999
HIPPODROME STAND ROOF	ITA	MODENA	SMEFCC	CABLE STAYED ROOF, STAY CABLES INSPECTION AND MAINTENANCE	1999
THE LONDON EYE	UK	LONDON	HOLLANDIA	CABLE SYSTEM SUPPLY AND INSTALLATION	1999
VINALOPO RIVER SUSPENSION ROAD BRIDGE	ESP	ELCHE	FOMENTO	SUSPENSION BRIDGE, MAIN CABLES, HANGERS	1999
DELLE ALPI STADIUM	ITA	TURIN	COMAPI	SPACE TENSOSTRUCTURE INSPECTION, MONITORING AND MAINTENANCE	1999
PEDESTRIAN BRIDGE	ITA	FAEDO V.T. (SO)	ITAL ENGINEERING	SUSPENSION BRIDGE, CABLES	1999
FORTH ROAD SUSPENSION BRIDGE	UK	EDINBURGH	MT STEEL	CABLE SYSTEM SUPPLY	1999
ROAD BRIDGE	ITA	MONTEBELLUNA (TV)	COGEBA	EXTERNAL REINFORCEMENT CABLES	1998
PISA TOWER SAFETY STAY CABLES	ITA	PISA	SOILMEC	CABLE SYSTEM SUPPLY AND INSTALLATION	1998
BAYER STAYED ROOF	ITA	GARBAGNATE MILANESE (MI)	OFFICINE LANDINI	CABLE STAYED ROOF, STAY CABLE SYSTEM	1998
STADSKANAAL BRIDGE	NLD	STADSKANAAL	HSM	CABLE STAYED BRIDGE, STAY CABLES	1998
DELLE ALPI STADIUM	ITA	TURIN	COMAPI	SPACE TENSOSTRUCTURE INSPECTION, MONITORING AND MAINTENANCE	1998
REINFORCED CONCRETE ARCH FRAME	ITA	ANZIO (RM)	COLGATE PALMOLIVE	EXTERNAL REINFORCEMENT CABLES	1998
PEDESTRIAN BRIDGE	ITA	PALAZZOLO DELLO STELLA (UD)	OFF.M.A. SRL	SUSPENSION BRIDGE, MAIN CABLES AND HANGERS REPLACEMENT	1998
PEDESTRIAN BRIDGE	ITA	LISSONE (MB)	MECOOP	CABLE STAYED CURVED BRIDGE STAY CABLE SYSTEM	1998
GALBANI STAYED ROOF	ITA	CASALE CREMASCO (CR)	CERIALI COSTRUZIONI	CABLE STAYED ROOF STAY CABLE SYSTEM	1997-1998
VALEX STAYED COVERING	ITA	SCHIO (VI)	VALEX	CABLE STAYED ROOF STAY CABLE SYSTEM	1997-1998
SPORT HALL COVERING	ITA	PRATO (FI)	FUBELLI	PLANE TENSOSTRUCTURES	1997-1998
EXHIBITION PAVILION ROOF	ITA	MARINA DI CARRARA (MC)	IFF CARRARA EXPO	MULTISPAN PLANE TENSOSTRUCTURES	1997-1998
SAN BARTOLOMEO CHURCH	ITA	BRUGHERIO (MB)	TECNOBRIANZA	HOOPING OF THE DOME CHAINING OF THE ARCHS	1997-1998
SPORT HALL ROOF	ITA	PALERMO	CGP	PLANE TENSOSTRUCTURE	1997-1998
ROME OLYMPIC STADIUM	ITA	ROME	IMAC	SPACE TENSOSTRUCTURE RETENSIONING	1997
MGDR FACTORY AND BUILDING	ITA	TURIN	MGDR	CABLE STAYED ROAD BRIDGE AND BUILDING INSPECTION AND MAINTENANCE	1997
GRANDE BIGO	ITA	GENOA	PORTO ANTICO DI GENOVA	SPACE STAYED STRUCTURE INSPECTION AND MAINTENANCE	1997

1997-1993

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
FACTORY BUILDING	ITA	CENTURIPE (EN)	LA PROMETEC	MULTISPAN PLANE TENSOSTRUCTURES, CABLE SYSTEM	1997
DELLE ALPI STADIUM	ITA	TURIN	COMAPI	SPACE TENSOSTRUCTURE INSPECTION, MONITORING AND MAINTENANCE	1997
PEDESTRIAN BRIDGE	ITA	CORTINA ALL'ADIGE (BZ)	CIMOLAI S.P.A.	CABLE STAYED BRIDGE STAY CABLE SYSTEM	1997
STOREBÆLT EAST BRIDGE	DNK	STOREBÆLT	COINFRA	HANGERS SEPARATORS AND HANDROPES ACCESSORIES	1997
STOREBÆLT EAST BRIDGE	DNK	STOREBÆLT	COINFRA	CABLE SYSTEM SUPPLY	1996-1997
CAPELLE A/D IJSSEL RIVIUM BRIDGE	NLD	CAPELLE A/D IJSSEL	HSM	CABLE STAYED BRIDGE STAY CABLES	1996-1997
CABLE STAYED ROAD BRIDGE	ITA	PALAZZOLO (BS)	VIBERTO	CABLE STAYED BRIDGE STAY CABLE SYSTEM	1996-1997
DELLE ALPI STADIUM	ITA	TURIN	SOGEALPI	SPACE TENSOSTRUCTURE INSPECTION, MONITORING AND MAINTENANCE	1996
STAYED BUILDING	ITA	FERENTINO (FR)	N2	STAYED BUIDING STAY CABLE SYSTEM	1996
CONGRESS HALL ROOF	ITA	AVIGLIANO (PZ)	ITALENGINEERING	PLANE TENSOSTRUCTURES CABLES	1996
TELECOM-TV TOWER	ITA	PENICE MOUNTAIN (PC)	LIBERTÀ PIACENZA	CABLE STAYED TOWER INSPECTION AND MAINTENCE	1996
ROAD ARCH BRIDGE	ITA	ALBENGA (SV)	CFM	ARCH SUSPENSION BRIDGE HANGERS	1995
SPORT HALL ROOFING	ITA	BREMBATE (BG)	ITALENGINEERING	PLANE TENSOSTRUCTURES CABLES	1995-1996
SWIMMING POOL ROOFING	ITA	ISILI (SU)	ITALENGINEERING	PLANE TENSOSTRUCTURES CABLES	1995-1996
STOREBÆLT EAST BRIDGE	DNK	STOREBÆLT	COINFRA	SUSPENSION BRIDGE HANGERS	1995-1997
TORCH TOWER	UAE	ABU DHABI	NAO	CABLE STAYED TOWERS STAY CABLE SYSTEM	1995
ROME OLYMPIC STADIUM	ITA	ROME	IMAC	SPACE TENSOSTRUCTURE INSPECTION AND MONITORING	1995
DELLE ALPI STADIUM	ITA	TURIN	SOGEALPI	SPACE TENSOSTRUCTURE INSPECTION MONITORING AND MAINTENANCE	1995
PEDESTRIAN BRIDGE	ITA	SCANDICCI (FI)	SCANDICCI MUNICIPALITY	CABLE STAYED BRIDGE INSPECTION	1995
SWIMMING POOL ROOF	ITA	ARCORE (MB)	ARCORE MUNICIPALITY	PLANE TENSOSTRUCTURES SPECIAL MAINTENANCE	1994-1995
SPORT HALL ROOF	ITA	ROSETO DEGLI ABRUZZI (TE)	ROSETO MUNICIPALITY	PLANE TENSOSTRUCTURES INSPECTION AND MAINTENANCE	1994
PEDESTRIAN BRIDGE	UK	BRISTOL	CIMOLAI S.P.A.	CABLE STAYED BRIDGE STAY CABLE SYSTEM	1994
MGDR OFFICE BUILDING	ITA	TROFARELLO (TO)	MGDR	CABLE STAYED BUILDING STAY CABLE SYSTEM	1994
MGDR FACTORY	ITA	TURIN	MGDR	CABLE STAYED ROAD BRIDGE STAY CABLE SYSTEM	1994
SPORT HALL	ITA	PESARO	CFM	TENSIONING ROPES FOR SPACE TRUSS SYSTEM	1994
FACTORY	ITA	VAREDO (MB)	SACLA	CABLE STAYED COVERING STAY CABLE SYSTEM	1994
25 APRIL SUSPENSION BRIDGE	PRT	LISBONA	HIDROSOREFAME	SUSPENSION BRIDGE REPLACEMENT OF HANGERS	1993

1993-1988

PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
ANEMOMETRIC TOWER	ITA	ALTA NURRA (SS)	GALTAROSSA	CABLE STAYED TOWERS, INSPECTION AND MAINTENANCE	1993
TORCH TOWER	ITA	ROME	RAFFINERIE DI ROMA	CABLE STAYED TOWER INSPECTION AND MAINTENANCE	1993
HOOPING OF THE DOME OF THE S. MARIA DEGLI ANGELI CATHEDRAL	ITA	ROME	POUCHAIN	HOOPING OF THE DOME	1993
FOOTBALL STADIUM	ITA	TURIN	SAPAM	SPACE TENSOSTRUCTURE, RETENSIONING, INSPECTION AND MANINTENANCE	1993-1994
SQUARE COVERING	ITA	GENOA	CMC	CABLE STAYED COVERING STAY CABLE SYSTEM	1993
HIPPODROME GRANDSTAND	ITA	MODENA	CFM	CABLE STAYED COVERING STAY CABLE SYSTEM	1993
SANTAMONICA STADIUM	ITA	MISANO ADRIATICO (RN)	CANOBBIO	CABLE SYSTEM SUPPLY	1992
AGIP TORCH TOWER	ITA	SANNAZZARO (PV)	SAMIA	CABLE STAYED TOWER STAY CABLE SYSTEM	1992
INTERNATIONAL EXIBITION	ITA	CARRARA (MC)	INTERNAZIONALE MARMI E MACCHINE	MULTISPAN PLANE TENSOSTRUCTURES INSPECTION AND MAINTENANCE	1992
ROPEWAY	ITA	SAN VINCENZO (LI)	SOLVAY	ROPEWAY SPECIAL MAINTENANCE	1992-1993
PIPELINE BRIDGE	ITA	PONTE S. GIOVANNI (PG)	BOSCO	SUSPENSION BRIDGE SPECIAL MAINTENANCE	1992
ANEMOMETRIC TOWERS	ITA	ALTA NURRA (SS)	GALTAROSSA	CABLE STAYED TOWERS STAY CABLE SYSTEM	1992
MOTOWAY TERMINAL	ITA	RONDISSONE (TO)	BIO ITALIA	CABLE STAYED COVERING STAY CABLE SYSTEM	1992
SPORT HALL	ITA	VIGEVANO (PV)	CEFER	PLANE TENSOSTRUCTURES	1992
FACTORY BUILDING ROOF	ITA	NICOLOSI (CT)	NICOLOSI MUNICIPALITY	MULTISPAN PLANE TENSOSTRUCTURE	1992
GRANDE BIGO	ITA	GENOA	CANOBBIO	CABLE SYSTEM SUPPLY AND INSTALLATION	1991-1992
FACTORY BUILDING ROOF	ITA	CENTURIPE (EN)	CENTURIPE MUNICIPALITY	MULTISPAN PLANE TENSOSTRUCTURES	1991
PEDESTRIAN BRIDGE	ITA	MILAN	PESSINA	CABLE STAYED BRIDGE STAY CABLE SYSTEM	1991
ROME OLYMPIC STADIUM	ITA	ROME	OLIMPICO '90	CABLE SYSTEM SUPPLY AND INSTALLATION	1990
SPORT HALL ROOF	ITA	REGGIO CALABRIA	M.L.M.	SPACE TENSOSTRUCTURE SYSTEM OF CABLES	1988
STADIO BRIANTEO STAND ROOF	ITA	MONZA (MB)	MONZA CALCIO	SPACE TENSOSTRUCTURE SYSTEM OF CABLES	1988

Redaelli Tecna S.p.A.
Business Unit Tensostructures
Via Alessandro Volta, 16
20093 Cologno Monzese (Milan, Italy)
Tel. +39 02 25307291
tensostructures@redaelli.com
www.teufelberger-redaelli.com

Graphic Design and Editorial Coordination: Capricorn/VM6
Printing: Unigrafica, Gorgonzola (MI)
Milan, January 2021

Teufelberger · Redaelli

CABLE SYSTEM

TECHNICAL PRODUCT DATA

Redaelli Tecna S.p.A.
Business Unit Tensostructures
Via Alessandro Volta, 16
20093 Cologno Monzese (Milan, Italy)
Tel. +39 02 25307291
tensostructures@redaelli.com
www.teufelberger-redaelli.com