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

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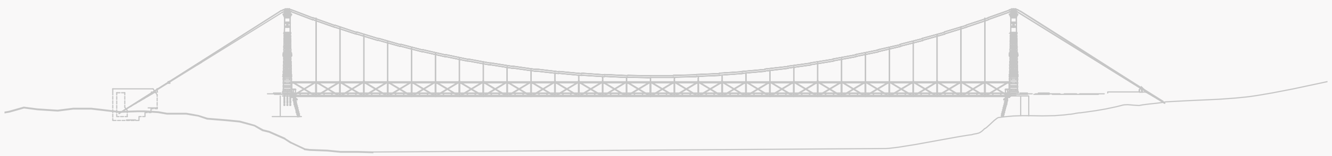
RANGE OF APPLICATIONS

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

SUSPENSION BRIDGES

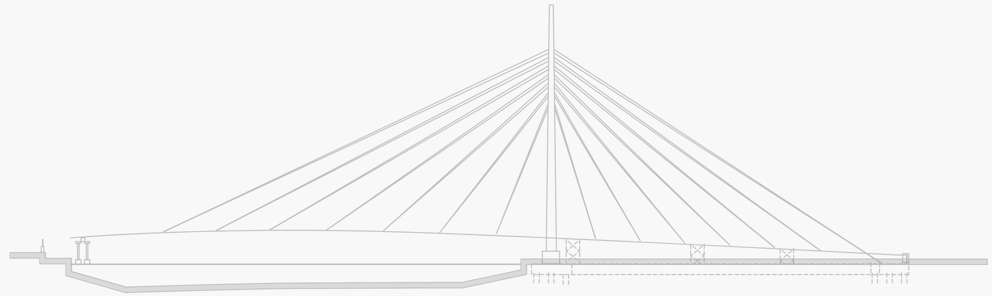


- Full Locked Coil ropes as main cables and hangers
- Open Spiral Strands as hangers, catwalk cables

RANGE OF APPLICATIONS

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

CABLE-STAYED BRIDGES

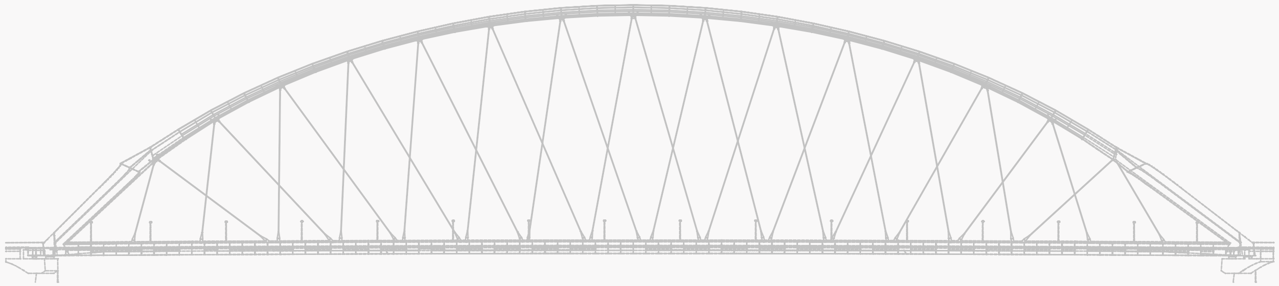


- Full Locked Coil ropes as stay cables
- Open Spiral Strands as stay cables

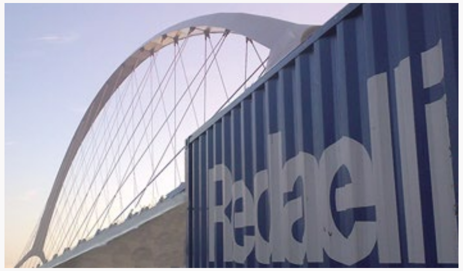
RANGE OF APPLICATIONS

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

TIED ARCH BRIDGES



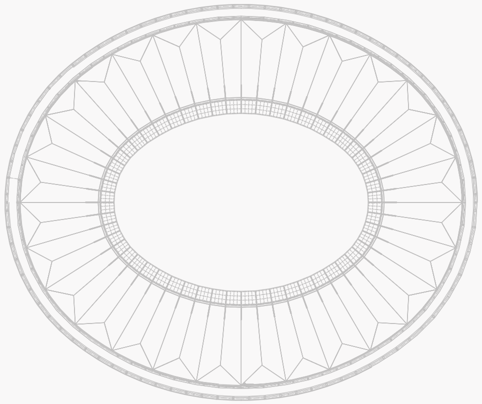
- Full Locked Coil ropes as hanger cables
- Open Spiral Strands as hanger cables



RANGE OF APPLICATIONS

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

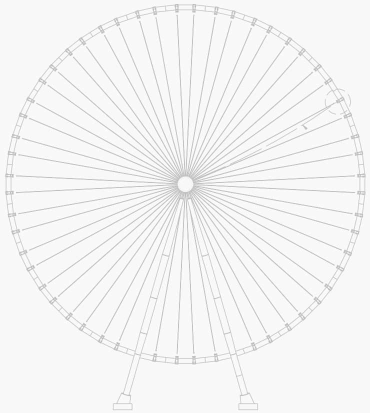
ROOF STRUCTURES



- 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

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

OBSERVATION WHEELS

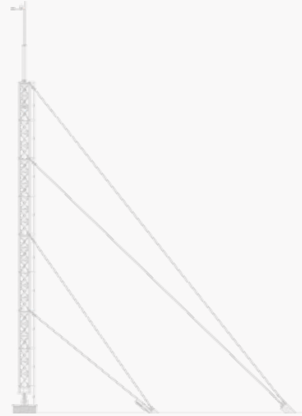


- Full Locked Coil ropes as spoke cables and stay cables, rotational spoke cables and tieback cables
- Open Spiral Strands as hangers, catwalk cables

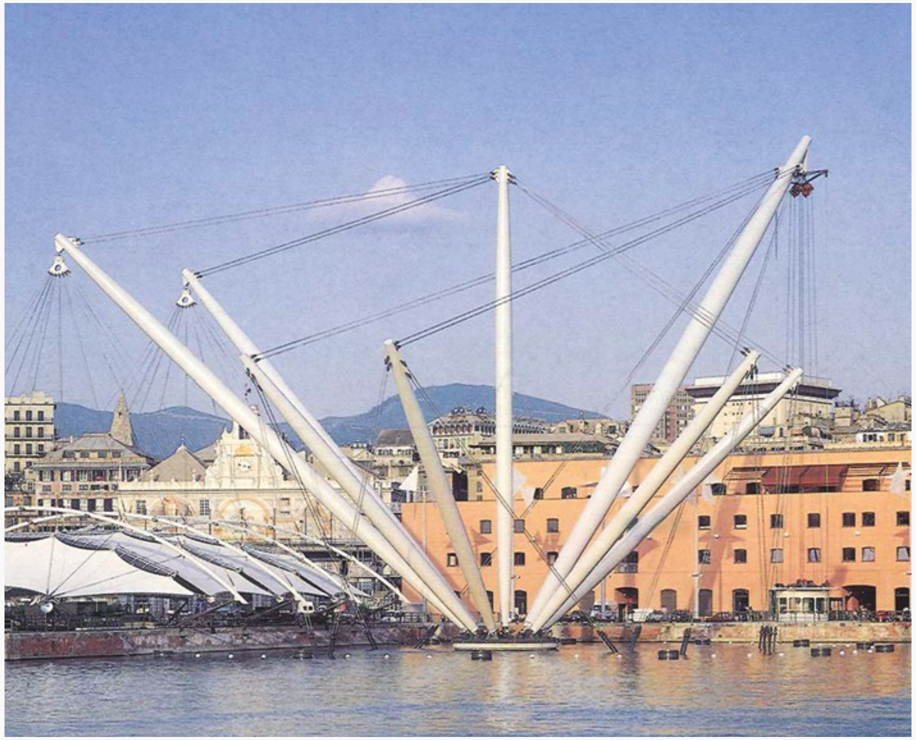
RANGE OF APPLICATIONS

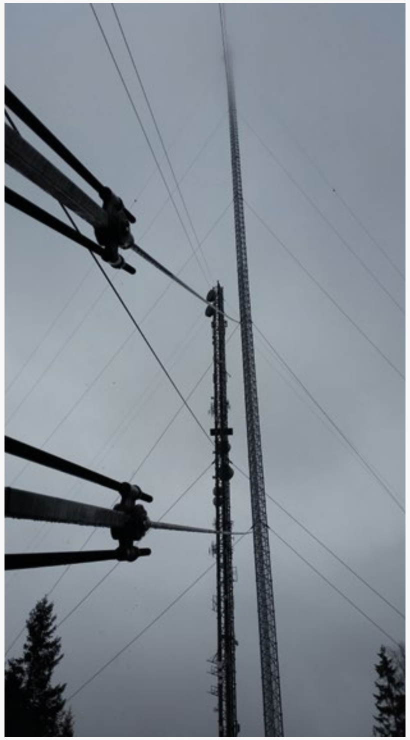
Teufelberger-Redaelli's cable system is used in a wide range of structural applications.

STAYED MASTS AND TOWERS



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



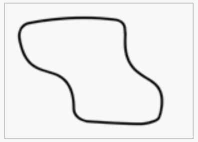


FULL LOCKED COIL ROPES

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 Grade IPS (228 ksi)



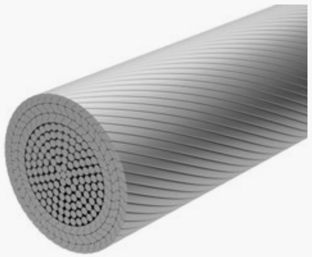
4-Stages Corrosion protection system:

- 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 stranding process
- Vacuum extruded or co-extruded High Density Polyethylene (HDPE) sheathing-optional
- Additional site applied surface corrosion protection system using Tensocoat-optional

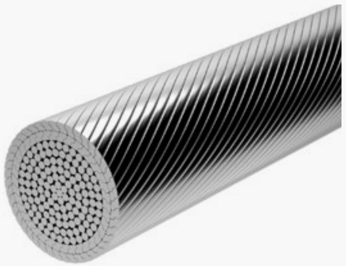
Reference standards for FLC cable design: EN 12385-10, EN 1993-1-8, EN 1993-1-9, EN 1993-1-11.

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

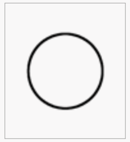
Teufelberger-Redaelli has developed a large data bank of such cable test results across a full range of several diameters.
Customised cable designs are also available to suit customer project specific requirements and specifications.
For all other corrosion protection systems we ask you to refer to the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

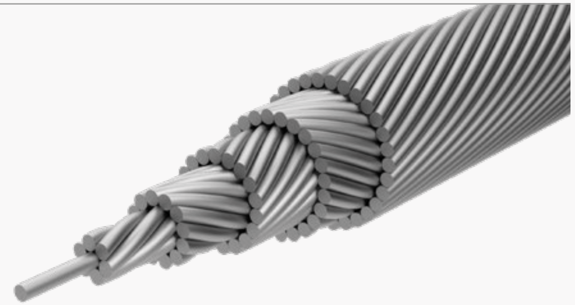
OPEN SPIRAL STRAND

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 0.2in)
Minimum Tensile Strength Grade IPS (228 ksi)





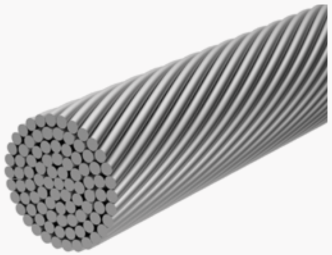
3-Stages Corrosion protection system:

- 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 stranding process
- Vacuum extruded or co-extruded High Density Polyethylene (HDPE) sheathing-optional
- Additional site applied surface corrosion protection system using Tensocoat-optional

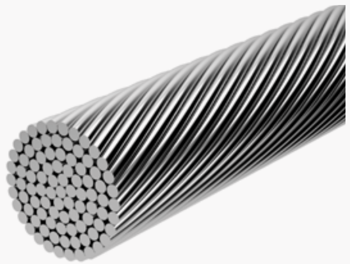
Reference standards for OSS cable design: EN 12385-10, EN 1993-1-8, EN 1993-1-9, EN 1993-1-11.

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.

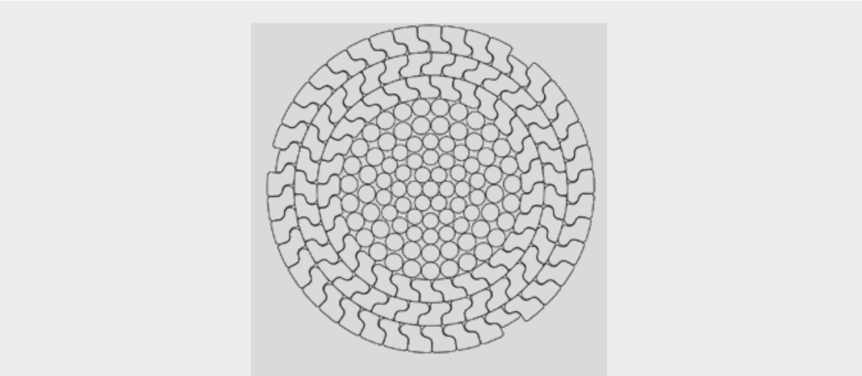
FLC WITH ANTI-VIBRATION GROOVES

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

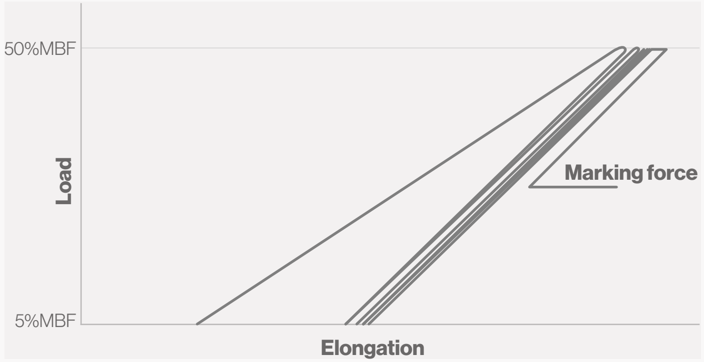
Long-term corrosion protection is ensured for each component part of the overall cable system. The end anchorages and clamps are carefully designed to avoid water traps in localised areas. Appropriate materials are used as corrosion protection of each element of the prefabricated cable.

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.

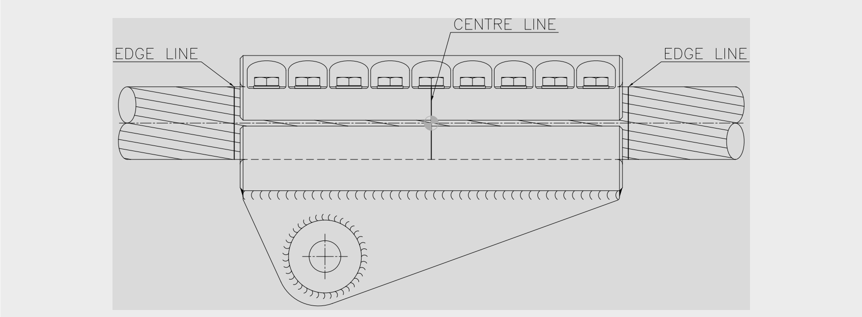
The standard individual cable assembly length tolerance (mm) after the pre-stretching, including the sockets is:

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

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 840 °F, 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 (kip)
L = cable length (in)
E = cable elastic modulus (ksi)
A = metallic cross section (in^2)
Δl_e = elastic elongation (in)

- 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.

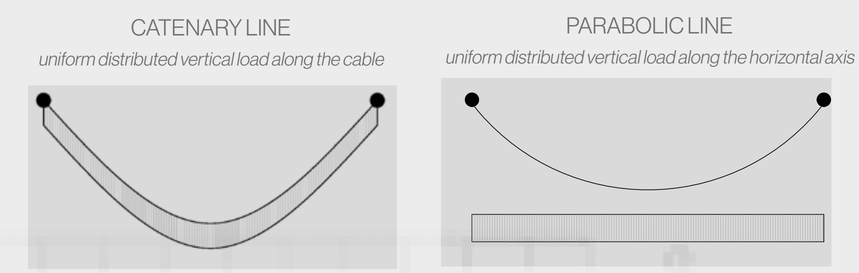
$$\Delta l_t = \alpha \cdot \Delta t \cdot L$$

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

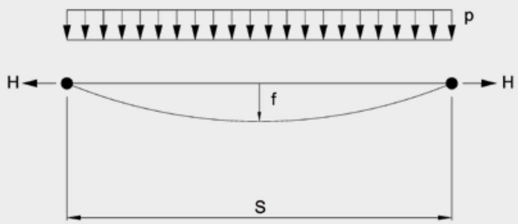
α = 6.67 x 10-6 for °F for steel wires
α = 8.89 x 10-6 for °F for stainless steel wires

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:

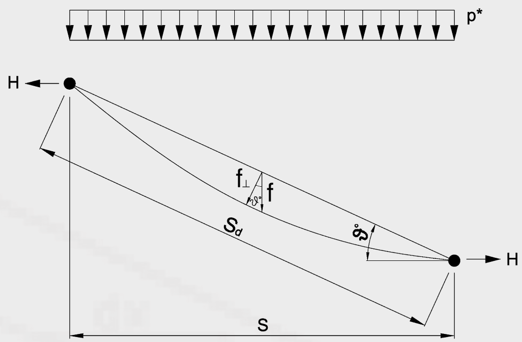


$$H = \frac{ps^2}{8f}$$

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

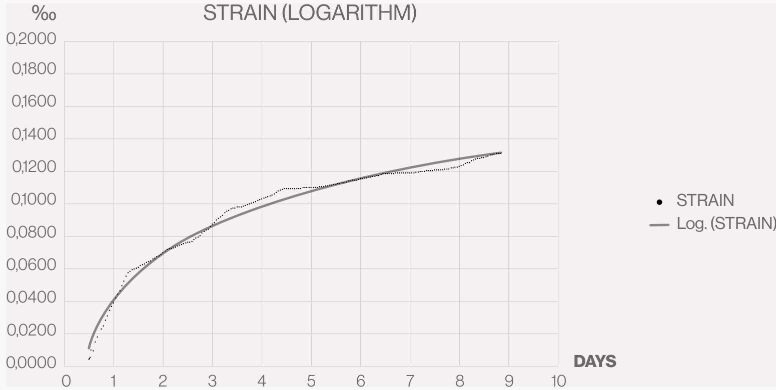
Teufelberger-Redaelli has a comprehensive database of tests performed on different cable system arrangements and cable diameters. Each manufactured cable is tested to validate the minimum breaking force and the modulus of elasticity according to EN 12385-1 (E+R test). Additional tests can verify other 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.

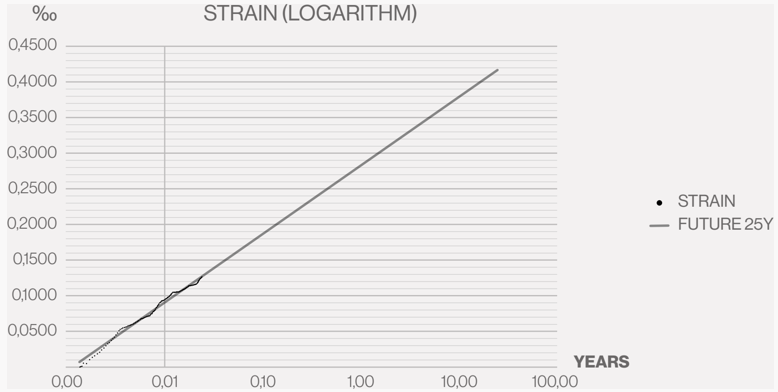
Tensile and modulus test (E+R test)

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, etc.) 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 = 2×10^6 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:

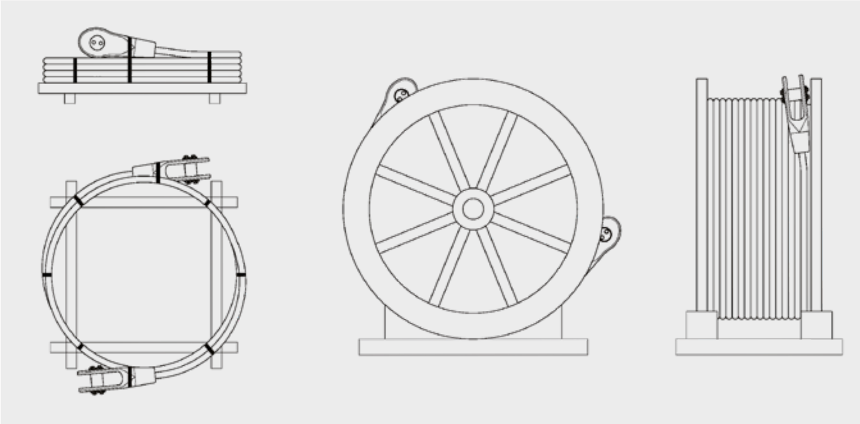
- $T=T_o+345*Log_{10}(8xT_m+1)$
- T_0 environment temperature at the starting point
- T_m time duration in min

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.



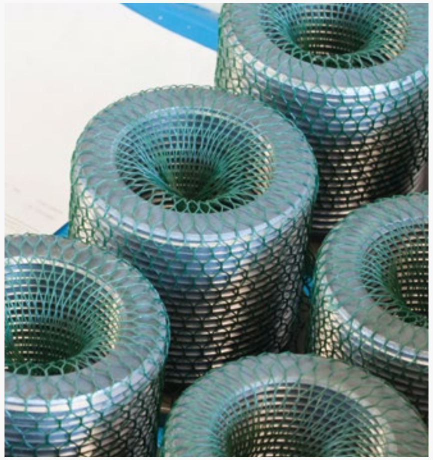
QUALITY CERTIFICATION

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 STRENGTH STEEL

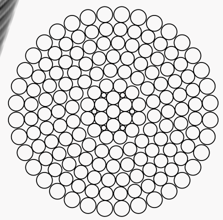
HIGH PERFORMANCE STEEL CABLE SYSTEM

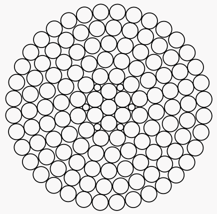
Teufelberger-Redaelli's exacting standards and attention to detail, combined with the highest quality controls and materials, means you can be assured your Teufelberger-Redaelli cable system will perform in your safety critical tensile structure application.

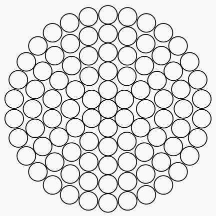
The cable system, prefabricated in the factory using the highest quality cable, sockets, socketing and finishing, will fulfil the design and installation needs of your project. Our range of high performance steel cables can be either supplied using Full Locked Coil (FLC) ropes or Open Spiral Strands (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.

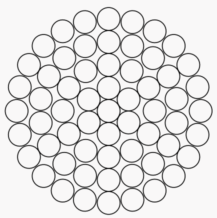
Teufelberger-Redaelli can draw upon more than 430 years of combined experience in this highly specialised market and is confirmed by succeeding on some of the most challenging civil engineering and construction projects in the world. Teufelberger-Redaelli's specialist Production Dept. and equipment control, 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 (in)	F_{uk} (1) (kip)	F_{Rd} (2) (kip)	A (in²)	EA (kip)	Mass (lb/ft)
OSS 8	5/16	13	9	0,1	1455	0,2
OSS 12	1/2	30	20	0,1	3273	0,5
OSS 16	5/8	54	36	0,2	5820	0,9
OSS 20	13/16	85	57	0,4	9093	1,4
OSS 24	15/16	123	82	0,5	13094	2,0
OSS 28	1 1/8	167	112	0,7	17822	2,7
OSS 32	1 1/4	218	145	1,0	23278	3,5
OSS 36	1 7/16	277	184	1,2	29461	4,4
OSS 40	1 9/16	342	228	1,5	36372	5,4
OSS 44	1 3/4	414	276	1,8	44010	6,6
OSS 48	1 7/8	492	328	2,2	52376	7,8
OSS 52	2	578	385	2,6	61469	9,2
OSS 56	2 3/16	670	447	3,0	71289	10,6
OSS 60	2 3/8	770	513	3,4	81837	12,2
OSS 64	2 1/2	870	580	3,9	91984	13,9
OSS 68	2 11/16	979	653	4,4	103841	15,7
OSS 72	2 13/16	1095	730	4,9	116417	17,6
OSS 76	3	1216	811	5,5	129712	19,6
OSS 80	3 1/8	1344	896	6,1	143725	21,7
OSS 84	3 5/16	1479	986	6,7	158457	24,0
OSS 88	3 7/16	1621	1081	7,4	173907	26,3
OSS 92	3 5/8	1769	1179	8,0	190076	28,7
OSS 96	3 3/4	1924	1283	8,8	206964	31,3
OSS 100	3 15/16	2085	1390	9,5	224570	33,9
OSS 104	4 1/8	2254	1502	10,3	242895	36,7
OSS 108	4 1/4	2428	1619	11,1	261939	39,6
OSS 112	4 7/16	2609	1739	11,9	281701	42,6
OSS 116	4 9/16	2797	1864	12,8	302182	45,7
OSS 120	4 3/4	2991	1994	13,7	323381	48,9

d — Nominal Diameter

F_{uk} — Characteristic Breaking Strength

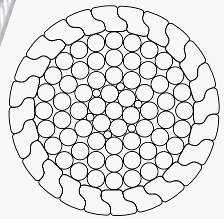
F_{Rd} — Design Resistance

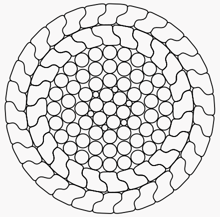
A — Metallic Cross Section

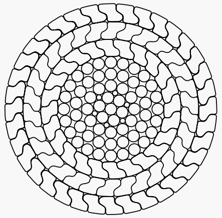
EA — Elastic Stiffness

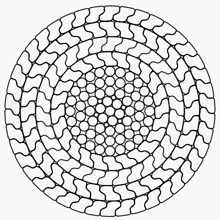
(1) Characteristic Breaking Strength F_{uk} = Minimum Breaking Force F_{min} x Loss Factor ke (ke = 1) where ke = 1 for metal/resin filled socket, ke = 0.9 for swaged socket
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$
Upon request, we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

FLC









PRODUCT CODE	d (in)	F_{uk} [1] (kip)	F_{Rd} [2] (kip)	A (in²)	EA (kip)	Mass (lb/ft)
FLC 16	5/8	57	38	0,3	6315	1,0
FLC 20	13/16	89	59	0,4	9867	1,5
FLC 24	15/16	129	86	0,6	14208	2,1
FLC 28	1 1/8	175	117	0,8	19339	2,9
FLC 32	1 1/4	229	153	1,1	25259	3,8
FLC 36	1 7/16	291	194	1,3	31968	4,8
FLC 40	1 9/16	363	242	1,7	39942	6,0
FLC 44	1 3/4	440	293	2,0	48330	7,3
FLC 48	1 7/8	524	349	2,4	57516	8,7
FLC 52	2	622	414	2,9	68306	10,3
FLC 56	2 3/16	721	480	3,3	79218	11,9
FLC 60	2 3/8	827	552	3,8	90939	13,7
FLC 64	2 1/2	942	628	4,3	103469	15,6
FLC 68	2 11/16	1063	709	4,9	115391	17,6
FLC 72	2 13/16	1177	785	5,5	129365	19,7
FLC 76	3	1307	872	6,1	144138	22,0
FLC 80	3 1/8	1444	963	6,8	159710	24,4
FLC 84	3 5/16	1589	1060	7,4	176081	26,9
FLC 88	3 7/16	1741	1161	8,2	193249	29,5
FLC 92	3 5/8	1900	1266	8,9	211217	32,2
FLC 96	3 3/4	2065	1377	9,7	229983	35,1
FLC 100	3 15/16	2265	1510	10,7	252483	38,5
FLC 104	4 1/8	2446	1631	11,6	273086	41,7
FLC 108	4 1/4	2636	1757	12,5	294496	44,9
FLC 112	4 7/16	2865	1910	13,6	320397	48,9
FLC 116	4 9/16	3071	2047	14,5	343692	52,4
FLC 120	4 3/4	3283	2189	15,6	367803	56,1
FLC 124	4 7/8	3504	2336	16,6	392732	59,9
FLC 128	5	3775	2516	17,9	423288	64,6
FLC 132	5 3/16	4012	2674	19,0	441872	68,7
FLC 136	5 3/8	4257	2838	20,2	469058	72,9
FLC 140	5 1/2	4509	3006	21,4	497056	77,3
FLC 144	5 11/16	4767	3178	22,7	525864	81,7
FLC 148	5 13/16	5035	3356	23,9	555485	86,4
FLC 152	6	5308	3538	25,2	585917	91,1
FLC 156	6 1/8	5589	3726	26,6	617160	95,9

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

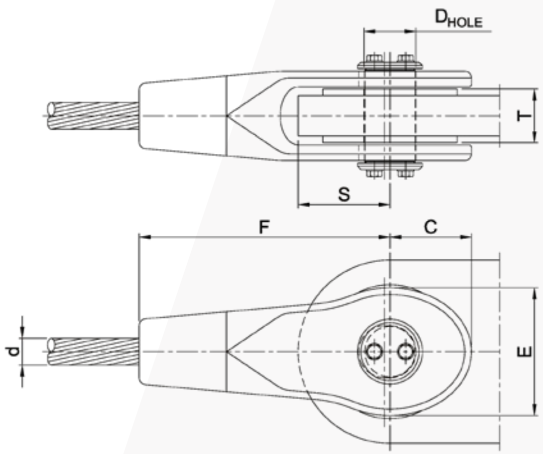
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$

For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

FIX FORK SOCKET

TTF



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	C (in)	D_{HOLE} (in)	E (in)	F (in)	S_{max} (in)	T_{min} (in)	T_{max} (in)	Mass (lb)
TTF 12	9/16	43	28	1 1/2	1	2 23/64	4 27/32	1 31/32	5/8	55/64	3
TTF 16	3/4	72	48	1 57/64	1 17/64	3 5/64	6 17/64	2 23/64	15/16	1 3/16	6
TTF 20	15/16	110	73	2 23/64	1 17/32	3 45/64	7 43/64	2 61/64	1 3/16	1 29/64	10
TTF 24	1 1/8	157	105	2 53/64	1 13/16	4 13/32	9 3/32	3 11/32	1 1/2	1 49/64	16
TTF 28	1 1/4	218	145	3 5/16	2 1/8	5 13/64	10 33/64	3 15/16	1 31/32	2 13/64	25
TTF 32	1 7/16	289	193	3 47/64	2 13/32	5 29/32	11 59/64	4 21/64	2 11/64	2 23/64	38
TTF 36	1 9/16	363	242	4 3/32	2 41/64	6 29/64	13 5/32	4 23/32	2 9/16	2 3/4	51
TTF 40	1 3/4	440	293	4 23/32	2 63/64	7 13/32	14 49/64	5 5/16	2 3/4	2 61/64	73
TTF 44	1 7/8	528	352	5 1/8	3 17/64	8 5/64	15 63/64	5 45/64	3 5/32	3 11/32	96
TTF 48	2	622	414	5 33/64	3 35/64	8 21/32	17 13/32	6 7/64	3 35/64	3 47/64	126
TTF 52	2 3/16	742	495	6 1/16	3 55/64	9 17/32	18 13/16	6 11/16	3 47/64	4 9/64	156
TTF 56	2 3/8	877	585	6 49/64	4 19/64	10 5/8	20 7/16	7 9/32	4 9/64	4 21/64	196
TTF 60	2 1/2	989	659	7 11/64	4 9/16	11 17/64	22 3/64	8 5/64	4 17/32	4 23/32	236
TTF 64	2 11/16	1124	749	7 23/32	4 7/8	12 1/8	23 15/32	8 15/32	4 59/64	5 1/8	287
TTF 68	2 13/16	1248	832	8 3/16	5 5/32	12 51/64	25 5/64	9 1/16	5 1/8	5 5/16	338
TTF 72	3	1405	937	8 37/64	5 7/16	13 37/64	26 1/2	9 29/64	5 33/64	5 45/64	399
TTF 76	3 1/8	1574	1049	9 9/64	5 3/4	14 3/8	27 7/8	10 3/64	5 29/32	6 7/64	474
TTF 80	3 5/16	1731	1154	9 41/64	6 1/16	15 13/64	29 17/32	10 5/8	6 7/64	6 1/2	557
TTF 84	3 7/16	1911	1274	10 5/64	6 11/32	15 29/32	30 3/4	11 1/32	6 1/2	6 11/16	638
TTF 88	3 5/8	2113	1409	11 7/64	7 3/64	17 13/32	32 9/16	11 13/16	6 57/64	7 3/32	768
TTF 92	3 3/4	2293	1529	11 17/32	7 23/64	18 3/16	34 11/64	12 13/32	7 9/32	7 31/64	882
TTF 96	3 15/16	2495	1664	12	7 41/64	18 31/32	35 25/64	12 51/64	7 31/64	7 7/8	987
TTF 100	4 1/8	2698	1798	12 19/32	7 61/64	19 49/64	37 13/64	13 37/64	7 43/64	8 5/64	1123
TTF 104	4 1/4	2923	1948	13 5/64	8 17/64	20 35/64	38 27/64	13 31/32	8 5/64	8 15/32	1247
TTF 108	4 7/16	3147	2098	13 37/64	8 37/64	21 27/64	40 3/64	14 9/16	8 17/64	8 55/64	1393
TTF 112	4 9/16	3417	2278	14 1/4	8 15/16	22 7/16	41 21/32	15 5/32	8 15/32	9 1/16	1559
TTF 116	4 3/4	3631	2420	14 49/64	9 19/64	23 5/16	43 5/64	15 3/4	8 55/64	9 29/64	1734
TTF 120	4 7/8	3912	2608	15 9/32	9 9/16	24 3/32	44 31/64	16 9/64	9 1/16	9 27/32	1923
TTF 124	5	4148	2765	15 3/4	9 59/64	24 7/8	46 7/64	16 59/64	9 29/64	10 3/64	2109
TTF 128	5 3/16	4451	2967	16 7/32	10 13/64	25 19/32	47 33/64	17 21/64	9 27/32	10 7/16	2326
TTF 132	5 3/8	4699	3132	16 47/64	10 33/64	26 29/64	48 47/64	17 23/32	10 3/64	10 5/8	2522
TTF 136	5 1/2	4991	3327	17 1/4	10 53/64	27 1/4	50 23/64	18 5/16	10 7/16	11 1/32	2764
TTF 140	5 11/16	5283	3522	17 51/64	11 9/64	28 5/32	51 49/64	18 45/64	10 5/8	11 27/64	3008
TTF 144	5 13/16	5587	3724	18 11/32	11 1/2	28 31/32	53 3/16	19 19/64	11 1/32	11 13/16	3290
TTF 148	6	5901	3934	18 55/64	11 13/16	29 49/64	54 39/64	19 11/16	11 27/64	12 13/64	3548
TTF 152	6 1/8	6227	4151	19 3/8	12 1/8	30 35/64	56 1/32	20 9/32	11 39/64	12 19/32	3839
TTF 156	6 5/16	6553	4369	19 7/8	12 7/16	31 11/32	57 7/16	20 43/64	11 13/16	12 63/64	4142

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

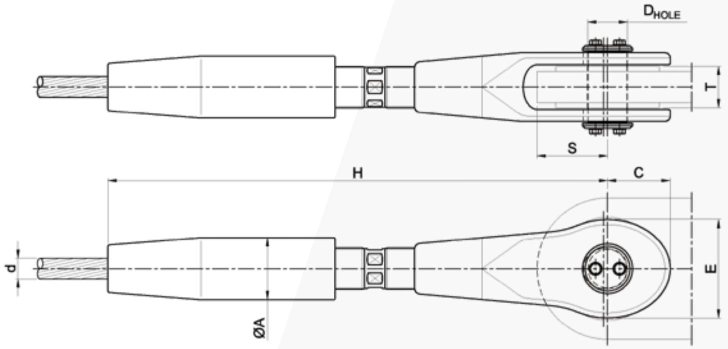
D_{HOLE} Hole Diameter

S_{max} Considering $T = T_{max}$

(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.



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	C (in)	D_{HOLE} (in)	E (in)	ØA (in)	H (in)	S_{max} (in)	T_{min} (in)	T_{max} (in)	Adj. (in)	Mass (lb)
TBF 12	9/16	43	28	1 1/2	1	2 23/64	1 37/64	12 21/64	1 31/32	5/8	55/64	± 1 3/16	5
TBF 16	3/4	72	48	1 57/64	1 17/64	3 5/64	2 11/64	15 43/64	2 23/64	15/16	1 3/16	± 1 37/64	12
TBF 20	15/16	110	73	2 23/64	1 17/32	3 45/64	2 9/16	19 1/64	2 61/64	1 3/16	1 29/64	± 1 31/32	20
TBF 24	1 1/8	157	105	2 53/64	1 13/16	4 13/32	2 61/64	23 5/32	3 11/32	1 1/2	1 49/64	± 2 9/16	34
TBF 28	1 1/4	218	145	3 5/16	2 1/8	5 13/64	3 35/64	26 37/64	3 15/16	1 31/32	2 13/64	± 2 61/64	53
TBF 32	1 7/16	289	193	3 47/64	2 13/32	5 29/32	3 15/16	30 43/64	4 21/64	2 11/64	2 23/64	± 3 35/64	78
TBF 36	1 9/16	363	242	4 3/32	2 41/64	6 29/64	4 21/64	34 3/8	4 23/32	2 9/16	2 3/4	± 3 15/16	107
TBF 40	1 3/4	440	293	4 23/32	2 63/64	7 13/32	4 23/32	38 7/64	5 5/16	2 3/4	2 61/64	± 4 21/64	144
TBF 44	1 7/8	528	352	5 1/8	3 17/64	8 5/64	5 1/8	41 39/64	5 45/64	3 5/32	3 11/32	± 4 23/32	191
TBF 48	2	622	414	5 33/64	3 35/64	8 21/32	5 45/64	45 23/64	6 7/64	3 35/64	3 47/64	± 5 1/8	259
TBF 52	2 3/16	742	495	6 1/16	3 55/64	9 17/32	6 7/64	49 3/32	6 11/16	3 47/64	4 9/64	± 5 33/64	315
TBF 56	2 3/8	877	585	6 49/64	4 19/64	10 5/8	6 1/2	53 1/32	7 9/32	4 9/64	4 21/64	± 5 29/32	394
TBF 60	2 1/2	989	659	7 11/64	4 9/16	11 17/64	7 3/32	56 3/8	8 5/64	4 17/32	4 23/32	± 6 19/64	486
TBF 64	2 11/16	1124	749	7 23/32	4 7/8	12 1/8	7 31/64	60 29/32	8 15/32	4 59/64	5 1/8	± 7 3/32	592
TBF 68	2 13/16	1248	832	8 3/16	5 5/32	12 51/64	7 7/8	65 7/16	9 1/16	5 1/8	5 5/16	± 7 7/8	700
TBF 72	3	1405	937	8 37/64	5 7/16	13 37/64	8 17/64	68 31/32	9 29/64	5 33/64	5 45/64	± 7 7/8	816
TBF 76	3 1/8	1574	1049	9 9/64	5 3/4	14 3/8	8 55/64	71 57/64	10 3/64	5 29/32	6 7/64	± 7 7/8	970
TBF 80	3 5/16	1731	1154	9 41/64	6 1/16	15 13/64	9 1/4	75 15/32	10 5/8	6 7/64	6 1/2	± 7 7/8	1122
TBF 84	3 7/16	1911	1274	10 5/64	6 11/32	15 29/32	9 41/64	78 27/64	11 1/32	6 1/2	6 11/16	± 7 7/8	1287
TBF 88	3 5/8	2113	1409	11 7/64	7 3/64	17 13/32	10 15/64	81 31/32	11 13/16	6 57/64	7 3/32	± 7 7/8	1525
TBF 92	3 3/4	2293	1529	11 17/32	7 23/64	18 3/16	10 5/8	86 29/64	12 13/32	7 9/32	7 31/64	± 7 7/8	1739
TBF 96	3 15/16	2495	1664	12	7 41/64	18 31/32	11 1/32	89 7/32	12 51/64	7 31/64	7 7/8	± 7 7/8	1934
TBF 100	4 1/8	2698	1798	12 19/32	7 61/64	19 49/64	11 39/64	92 23/64	13 37/64	7 43/64	8 5/64	± 7 7/8	2202
TBF 104	4 1/4	2923	1948	13 5/64	8 17/64	20 35/64	12	95 1/8	13 31/32	8 5/64	8 15/32	± 7 7/8	2433
TBF 108	4 7/16	3147	2098	13 37/64	8 37/64	21 27/64	12 13/32	98 5/64	14 9/16	8 17/64	8 55/64	± 7 7/8	2686
TBF 112	4 9/16	3417	2278	14 1/4	8 15/16	22 7/16	12 51/64	100 53/64	15 5/32	8 15/32	9 1/16	± 7 7/8	2968
TBF 116	4 3/4	3631	2420	14 49/64	9 19/64	23 5/16	13 25/64	103 25/64	15 3/4	8 55/64	9 29/64	± 7 7/8	3305
TBF 120	4 7/8	3912	2608	15 9/32	9 9/16	24 3/32	13 25/32	105 15/16	16 9/64	9 1/16	9 27/32	± 7 7/8	3626
TBF 124	5	4148	2765	15 3/4	9 59/64	24 7/8	14 11/64	109 11/16	16 59/64	9 29/64	10 3/64	± 7 7/8	3964
TBF 128	5 3/16	4451	2967	16 7/32	10 13/64	25 19/32	14 9/16	112 41/64	17 21/64	9 27/32	10 7/16	± 8 17/64	4339
TBF 132	5 3/8	4699	3132	16 47/64	10 33/64	26 29/64	14 61/64	114 61/64	17 23/32	10 3/64	10 5/8	± 8 17/64	4680
TBF 136	5 1/2	4991	3327	17 1/4	10 53/64	27 1/4	15 23/64	117 41/64	18 5/16	10 7/16	11 1/32	± 8 17/64	5080
TBF 140	5 11/16	5283	3522	17 51/64	11 9/64	28 5/32	16 9/64	120 43/64	18 45/64	10 5/8	11 27/64	± 8 17/64	5610
TBF 144	5 13/16	5587	3724	18 11/32	11 1/2	28 31/32	16 17/32	123 5/32	19 19/64	11 1/32	11 13/16	± 8 17/64	6064
TBF 148	6	5901	3934	18 55/64	11 13/16	29 49/64	16 59/64	125 15/64	19 11/16	11 27/64	12 13/64	± 8 17/64	6537
TBF 152	6 1/8	6227	4151	19 3/8	12 1/8	30 35/64	17 33/64	127 29/32	20 9/32	11 39/64	12 19/32	± 8 17/64	7110
TBF 156	6 5/16	6553	4369	19 7/8	12 7/16	31 11/32	17 29/32	130 19/32	20 43/64	11 13/16	12 63/64	± 8 17/64	7643

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

S_{max} Considering $T = T_{max}$

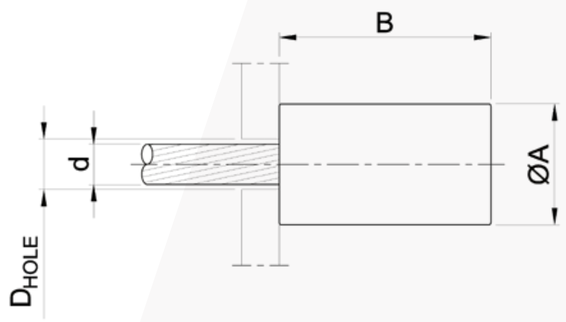
Adj Adjustment

(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} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	Mass (lb)
CYF 12	9/16	43	28	1 37/64	2 31/64	29/32	1
CYF 16	3/4	72	48	2 11/64	3 5/16	1 7/64	2
CYF 20	15/16	110	73	2 9/16	4 9/64	1 3/8	4
CYF 24	1 1/8	157	105	2 61/64	4 61/64	1 37/64	6
CYF 28	1 1/4	218	145	3 35/64	5 25/32	1 49/64	11
CYF 32	1 7/16	289	193	3 15/16	6 39/64	1 31/32	15
CYF 36	1 9/16	363	242	4 21/64	7 7/16	2 11/64	19
CYF 40	1 3/4	440	293	4 23/32	8 17/64	2 13/32	25
CYF 44	1 7/8	528	352	5 1/8	9 3/32	2 19/32	32
CYF 48	2	622	414	5 45/64	9 59/64	2 51/64	45
CYF 52	2 3/16	742	495	6 7/64	10 3/4	2 63/64	55
CYF 56	2 3/8	877	585	6 1/2	11 37/64	3 3/16	66
CYF 60	2 1/2	989	659	7 3/32	12 13/32	3 27/64	87
CYF 64	2 11/16	1124	749	7 31/64	13 15/64	3 5/8	103
CYF 68	2 13/16	1248	832	7 7/8	14 1/16	3 13/16	119
CYF 72	3	1405	937	8 17/64	14 7/8	4 1/64	138
CYF 76	3 1/8	1574	1049	8 55/64	15 45/64	4 7/32	170
CYF 80	3 5/16	1731	1154	9 1/4	16 17/32	4 29/64	195
CYF 84	3 7/16	1911	1274	9 41/64	17 23/64	4 41/64	221
CYF 88	3 5/8	2113	1409	10 15/64	18 3/16	4 27/32	264
CYF 92	3 3/4	2293	1529	10 5/8	19 1/64	5 3/64	296
CYF 96	3 15/16	2495	1664	11 1/32	19 27/32	5 15/64	329
CYF 100	4 1/8	2698	1798	11 39/64	20 43/64	5 15/32	388
CYF 104	4 1/4	2923	1948	12	21 1/2	5 43/64	429
CYF 108	4 7/16	3147	2098	12 13/32	22 21/64	5 55/64	471
CYF 112	4 9/16	3417	2278	12 51/64	23 5/32	6 1/16	517
CYF 116	4 3/4	3631	2420	13 25/64	23 31/32	6 17/64	593
CYF 120	4 7/8	3912	2608	13 25/32	24 51/64	6 1/2	649
CYF 124	5	4148	2765	14 11/64	25 5/8	6 11/16	705
CYF 128	5 3/16	4451	2967	14 9/16	26 29/64	6 57/64	764
CYF 132	5 3/8	4699	3132	14 61/64	27 9/32	7 3/32	827
CYF 136	5 1/2	4991	3327	15 23/64	28 7/64	7 9/32	892
CYF 140	5 11/16	5283	3522	16 9/64	28 15/16	7 33/64	1047
CYF 144	5 13/16	5587	3724	16 17/32	29 49/64	7 23/32	1124
CYF 148	6	5901	3934	16 59/64	30 19/32	7 29/32	1204
CYF 152	6 1/8	6227	4151	17 33/64	31 27/64	8 7/64	1337
CYF 156	6 5/16	6553	4369	17 29/32	32 1/4	8 5/16	1427

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

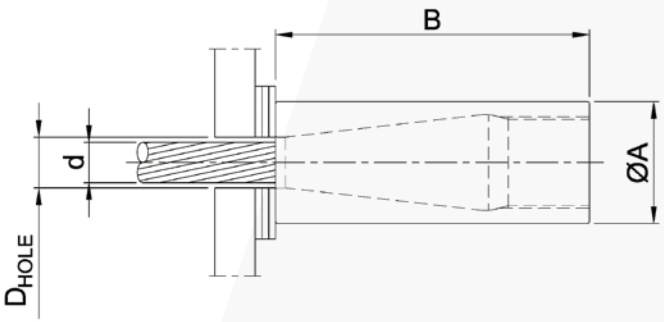
D_{HOLE} Hole Diameter

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

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} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	Mass (lb)
CYS 12	9/16	43	28	1 37/64	3 15/16	29/32	1
CYS 16	3/4	72	48	2 11/64	5 1/8	1 7/64	3
CYS 20	15/16	110	73	2 9/16	6 19/64	1 3/8	6
CYS 24	1 1/8	157	105	2 61/64	7 31/64	1 37/64	8
CYS 28	1 1/4	218	145	3 35/64	8 21/32	1 49/64	14
CYS 32	1 7/16	289	193	3 15/16	9 27/32	1 31/32	20
CYS 36	1 9/16	363	242	4 21/64	11 7/32	2 11/64	27
CYS 40	1 3/4	440	293	4 23/32	12 13/32	2 13/32	34
CYS 44	1 7/8	528	352	5 1/8	13 37/64	2 19/32	43
CYS 48	2	622	414	5 45/64	14 49/64	2 51/64	60
CYS 52	2 3/16	742	495	6 7/64	15 15/16	2 63/64	74
CYS 56	2 3/8	877	585	6 1/2	17 1/8	3 3/16	88
CYS 60	2 1/2	989	659	7 3/32	18 5/16	3 27/64	116
CYS 64	2 11/16	1124	749	7 31/64	19 31/64	3 5/8	135
CYS 68	2 13/16	1248	832	7 7/8	20 43/64	3 13/16	158
CYS 72	3	1405	937	8 17/64	21 27/32	4 1/64	181
CYS 76	3 1/8	1574	1049	8 55/64	23 1/32	4 7/32	224
CYS 80	3 5/16	1731	1154	9 1/4	24 7/32	4 29/64	255
CYS 84	3 7/16	1911	1274	9 41/64	25 25/64	4 41/64	291
CYS 88	3 5/8	2113	1409	10 15/64	26 37/64	4 27/32	348
CYS 92	3 3/4	2293	1529	10 5/8	27 3/4	5 3/64	387
CYS 96	3 15/16	2495	1664	11 1/32	28 15/16	5 15/64	428
CYS 100	4 1/8	2698	1798	11 39/64	30 1/8	5 15/32	512
CYS 104	4 1/4	2923	1948	12	31 19/64	5 43/64	562
CYS 108	4 7/16	3147	2098	12 13/32	32 31/64	5 55/64	614
CYS 112	4 9/16	3417	2278	12 51/64	33 21/32	6 1/16	670
CYS 116	4 3/4	3631	2420	13 25/64	34 27/32	6 17/64	770
CYS 120	4 7/8	3912	2608	13 25/32	36 1/32	6 1/2	848
CYS 124	5	4148	2765	14 11/64	37 13/64	6 11/16	917
CYS 128	5 3/16	4451	2967	14 9/16	38 25/64	6 57/64	989
CYS 132	5 3/8	4699	3132	14 61/64	39 9/16	7 3/32	1065
CYS 136	5 1/2	4991	3327	15 23/64	40 3/4	7 9/32	1157
CYS 140	5 11/16	5283	3522	16 9/64	41 59/64	7 33/64	1364
CYS 144	5 13/16	5587	3724	16 17/32	43 7/64	7 23/32	1459
CYS 148	6	5901	3934	16 59/64	44 19/64	7 29/32	1571
CYS 152	6 1/8	6227	4151	17 33/64	45 15/32	8 7/64	1744
CYS 156	6 5/16	6553	4369	17 29/32	46 21/32	8 5/16	1856

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

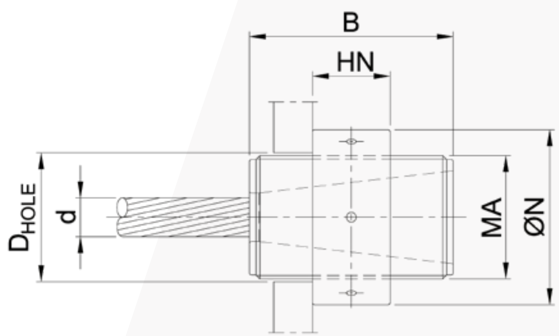
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

CYT

PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	MA (in)	B (in)	D_{HOLE} (in)	ØN (in)	HN (in)	Adj. (in)	Mass (lb)
CYT 12	9/16	43	28	1 49/64	2 31/64	1 57/64	2 9/16	63/64	± 5/8	2
CYT 16	3/4	72	48	2 11/64	3 5/16	2 21/64	3 5/32	1 3/8	± 27/32	3
CYT 20	15/16	110	73	2 3/4	4 9/64	2 61/64	3 15/16	1 37/64	± 1 5/32	7
CYT 24	1 1/8	157	105	3 5/32	4 61/64	3 11/32	4 17/32	1 31/32	± 1 3/8	11
CYT 28	1 1/4	218	145	3 35/64	5 25/32	3 47/64	5 1/8	2 23/64	± 1 19/32	17
CYT 32	1 7/16	289	193	4 9/64	6 39/64	4 21/64	5 29/32	2 9/16	± 1 29/32	25
CYT 36	1 9/16	363	242	4 17/32	7 7/16	4 23/32	6 1/2	2 61/64	± 2 3/32	34
CYT 40	1 3/4	440	293	5 1/8	8 17/64	5 5/16	7 9/32	3 5/32	± 2 13/32	48
CYT 44	1 7/8	528	352	5 33/64	9 3/32	5 45/64	7 7/8	3 35/64	± 2 5/8	62
CYT 48	2	622	414	5 29/32	9 59/64	6 7/64	8 17/64	3 15/16	± 2 53/64	75
CYT 52	2 3/16	742	495	6 1/2	10 3/4	6 11/16	9 1/4	4 9/64	± 3 5/32	101
CYT 56	2 3/8	877	585	6 57/64	11 37/64	7 3/32	9 41/64	4 17/32	± 3 23/64	119
CYT 60	2 1/2	989	659	7 31/64	12 13/32	7 43/64	10 5/8	4 23/32	± 3 39/64	153
CYT 64	2 11/16	1124	749	7 7/8	13 15/64	8 3/16	11 1/32	5 1/8	± 3 13/16	176
CYT 68	2 13/16	1248	832	8 17/64	14 1/16	8 37/64	11 39/64	5 33/64	± 4 1/32	208
CYT 72	3	1405	937	8 55/64	14 7/8	9 11/64	12 13/32	5 45/64	± 4 11/32	252
CYT 76	3 1/8	1574	1049	9 1/4	15 45/64	9 41/64	12 63/64	6 7/64	± 4 31/64	287
CYT 80	3 5/16	1731	1154	9 27/32	16 17/32	10 15/64	13 25/32	6 19/64	± 4 51/64	344
CYT 84	3 7/16	1911	1274	10 15/64	17 23/64	10 5/8	14 3/8	6 11/16	± 5 1/64	392
CYT 88	3 5/8	2113	1409	10 5/8	18 3/16	11 1/32	14 61/64	7 3/32	± 5 15/64	445
CYT 92	3 3/4	2293	1529	11 7/32	19 1/64	11 11/16	15 3/4	7 9/32	± 5 15/32	511
CYT 96	3 15/16	2495	1664	11 39/64	19 27/32	12 3/32	16 17/32	7 43/64	± 5 11/16	585
CYT 100	4 1/8	2698	1798	12 13/64	20 43/64	12 43/64	17 1/8	7 7/8	± 6	662
CYT 104	4 1/4	2923	1948	12 19/32	21 1/2	13 5/64	17 23/32	8 17/64	± 6 7/32	737
CYT 108	4 7/16	3147	2098	13 3/16	22 21/64	13 21/32	18 1/2	8 21/32	± 6 23/64	832
CYT 112	4 9/16	3417	2278	13 25/32	23 5/32	14 3/8	19 19/64	8 55/64	± 6 43/64	942
CYT 116	4 3/4	3631	2420	14 11/64	23 31/32	14 49/64	20 5/64	9 1/4	± 6 57/64	1051
CYT 120	4 7/8	3912	2608	14 9/16	24 51/64	15 5/32	20 15/32	9 29/64	± 7 13/64	1129
CYT 124	5	4148	2765	15 5/32	25 5/8	15 15/16	21 17/64	9 27/32	± 7 27/64	1256
CYT 128	5 3/16	4451	2967	15 35/64	26 29/64	16 11/32	22 3/64	10 15/64	± 7 41/64	1388
CYT 132	5 3/8	4699	3132	16 9/64	27 9/32	16 59/64	22 53/64	10 7/16	± 7 61/64	1541
CYT 136	5 1/2	4991	3327	16 17/32	28 7/64	17 21/64	23 15/64	10 53/64	± 8 11/64	1635
CYT 140	5 11/16	5283	3522	17 1/8	28 15/16	18 7/64	24 1/64	11 1/32	± 8 31/64	1810
CYT 144	5 13/16	5587	3724	17 33/64	29 49/64	18 1/2	24 51/64	11 27/64	± 8 45/64	1978
CYT 148	6	5901	3934	17 29/32	30 19/32	18 57/64	25 13/64	11 13/16	± 8 59/64	2104
CYT 152	6 1/8	6227	4151	18 1/2	31 27/64	19 11/16	25 63/64	12	± 9 15/64	2305
CYT 156	6 5/16	6553	4369	19 3/32	32 1/4	20 9/32	26 49/64	12 13/32	± 9 29/64	2534



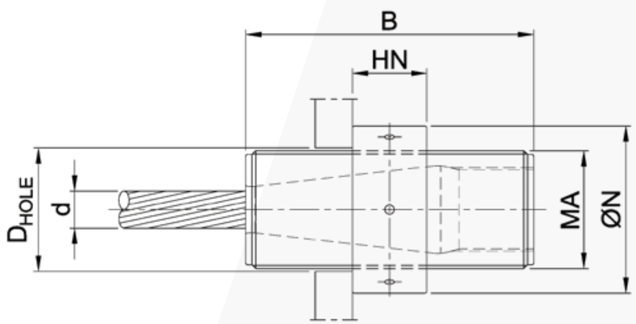
- d_{max} — Max Strand Diameter
- N_{uk} — Characteristic Breaking Strength
- N_{Rd} — Design Resistance
- D_{HOLE} — Hole Diameter
- Adj. — Adjustment

(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

CYN



dmax	Max Strand Diameter
Nuk	Characteristic Breaking Strength
NRd	Design Resistance
DHOLE	Hole Diameter
Adj.	Adjustment

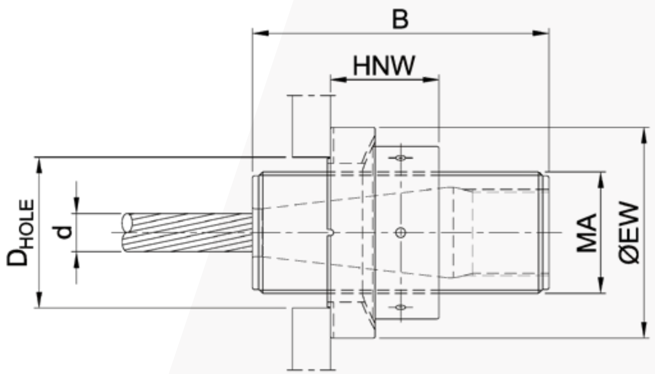
PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	MA (in)	B (in)	D_{HOLE} (in)	ØN (in)	HN (in)	Adj. (in)	Mass (lb)
CYN 12	9/16	43	28	1 49/64	3 15/16	1 57/64	2 9/16	63/64	± 1 23/64	2
CYN 16	3/4	72	48	2 11/64	5 1/8	2 21/64	3 5/32	1 3/8	± 1 3/4	4
CYN 20	15/16	110	73	2 3/4	6 19/64	2 61/64	3 15/16	1 37/64	± 2 1/4	9
CYN 24	1 1/8	157	105	3 5/32	7 31/64	3 11/32	4 17/32	1 31/32	± 2 41/64	14
CYN 28	1 1/4	218	145	3 35/64	8 21/32	3 47/64	5 1/8	2 23/64	± 3 1/32	20
CYN 32	1 7/16	289	193	4 9/64	9 27/32	4 21/64	5 29/32	2 9/16	± 3 17/32	31
CYN 36	1 9/16	363	242	4 17/32	11 7/32	4 23/32	6 1/2	2 61/64	± 3 31/32	42
CYN 40	1 3/4	440	293	5 1/8	12 13/32	5 5/16	7 9/32	3 5/32	± 4 15/32	59
CYN 44	1 7/8	528	352	5 33/64	13 37/64	5 45/64	7 7/8	3 35/64	± 4 55/64	75
CYN 48	2	622	414	5 29/32	14 49/64	6 7/64	8 17/64	3 15/16	± 5 1/4	89
CYN 52	2 3/16	742	495	6 1/2	15 15/16	6 11/16	9 1/4	4 9/64	± 5 3/4	123
CYN 56	2 3/8	877	585	6 57/64	17 1/8	7 3/32	9 41/64	4 17/32	± 6 9/64	144
CYN 60	2 1/2	989	659	7 31/64	18 5/16	7 43/64	10 5/8	4 23/32	± 6 9/16	183
CYN 64	2 11/16	1124	749	7 7/8	19 31/64	8 3/16	11 1/32	5 1/8	± 6 61/64	211
CYN 68	2 13/16	1248	832	8 17/64	20 43/64	8 37/64	11 39/64	5 33/64	± 7 11/32	250
CYN 72	3	1405	937	8 55/64	21 27/32	9 11/64	12 13/32	5 45/64	± 7 53/64	304
CYN 76	3 1/8	1574	1049	9 1/4	23 1/32	9 41/64	12 63/64	6 7/64	± 8 5/32	343
CYN 80	3 5/16	1731	1154	9 27/32	24 7/32	10 15/64	13 25/32	6 19/64	± 8 41/64	411
CYN 84	3 7/16	1911	1274	10 15/64	25 25/64	10 5/8	14 3/8	6 11/16	± 9 1/32	471
CYN 88	3 5/8	2113	1409	10 5/8	26 37/64	11 1/32	14 61/64	7 3/32	± 9 27/64	531
CYN 92	3 3/4	2293	1529	11 7/32	27 3/4	11 11/16	15 3/4	7 9/32	± 9 27/32	611
CYN 96	3 15/16	2495	1664	11 39/64	28 15/16	12 3/32	16 17/32	7 43/64	± 10 15/64	693
CYN 100	4 1/8	2698	1798	12 13/64	30 1/8	12 43/64	17 1/8	7 7/8	± 10 47/64	795
CYN 104	4 1/4	2923	1948	12 19/32	31 19/64	13 5/64	17 23/32	8 17/64	± 11 1/8	880
CYN 108	4 7/16	3147	2098	13 3/16	32 31/64	13 21/32	18 1/2	8 21/32	± 11 7/16	991
CYN 112	4 9/16	3417	2278	13 25/32	33 21/32	14 3/8	19 19/64	8 55/64	± 11 59/64	1124
CYN 116	4 3/4	3631	2420	14 11/64	34 27/32	14 49/64	20 5/64	9 1/4	± 12 21/64	1246
CYN 120	4 7/8	3912	2608	14 9/16	36 1/32	15 5/32	20 15/32	9 29/64	± 12 13/16	1347
CYN 124	5	4148	2765	15 5/32	37 13/64	15 15/16	21 17/64	9 27/32	± 13 13/64	1495
CYN 128	5 3/16	4451	2967	15 35/64	38 25/64	16 11/32	22 3/64	10 15/64	± 13 39/64	1642
CYN 132	5 3/8	4699	3132	16 9/64	39 9/16	16 59/64	22 53/64	10 7/16	± 14 3/32	1827
CYN 136	5 1/2	4991	3327	16 17/32	40 3/4	17 21/64	23 15/64	10 53/64	± 14 31/64	1944
CYN 140	5 11/16	5283	3522	17 1/8	41 59/64	18 7/64	24 1/64	11 1/32	± 14 63/64	2156
CYN 144	5 13/16	5587	3724	17 33/64	43 7/64	18 1/2	24 51/64	11 27/64	± 15 3/8	2344
CYN 148	6	5901	3934	17 29/32	44 21/64	18 57/64	25 13/64	11 13/16	± 15 25/32	2491
CYN 152	6 1/8	6227	4151	18 1/2	45 7/16	19 11/16	25 63/64	12	± 16 15/64	2746
CYN 156	6 5/16	6553	4369	19 3/32	46 37/64	20 9/32	26 49/64	12 13/32	± 16 39/64	3021

(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 SPHERICAL NUT AND WASHER

CYW



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	MA (in)	B (in)	D_{HOLE} (in)	HNW (in)	ØEW (in)	Adj. (in)	Mass (lb)
CYW 12	9/16	43	28	1 49/64	3 15/16	2 1/4	1 7/16	3 5/32	± 1 21/64	3
CYW 16	3/4	72	48	2 11/64	5 1/8	2 43/64	1 55/64	3 15/16	± 1 23/32	6
CYW 20	15/16	110	73	2 3/4	6 19/64	3 25/64	2 5/16	4 23/32	± 2 13/64	12
CYW 24	1 1/8	157	105	3 5/32	7 31/64	3 57/64	2 53/64	5 33/64	± 2 37/64	18
CYW 28	1 1/4	218	145	3 35/64	8 21/32	4 3/8	3 25/64	6 19/64	± 2 31/32	27
CYW 32	1 7/16	289	193	4 9/64	9 27/32	5 1/8	3 47/64	7 3/32	± 3 29/64	41
CYW 36	1 9/16	363	242	4 17/32	11 7/32	5 5/8	4 7/32	7 7/8	± 3 57/64	55
CYW 40	1 3/4	440	293	5 1/8	12 13/32	6 11/32	4 37/64	9 1/16	± 4 3/8	80
CYW 44	1 7/8	528	352	5 33/64	13 37/64	6 27/32	4 15/16	9 29/64	± 4 49/64	97
CYW 48	2	622	414	5 29/32	14 49/64	7 21/64	5 1/2	10 15/64	± 5 5/32	118
CYW 52	2 3/16	742	495	6 1/2	15 15/16	8 5/64	5 51/64	11 27/64	± 5 41/64	163
CYW 56	2 3/8	877	585	6 57/64	17 1/8	8 35/64	6 13/32	11 13/16	± 6 1/32	188
CYW 60	2 1/2	989	659	7 31/64	18 5/16	9 19/64	6 45/64	12 63/64	± 6 27/64	242
CYW 64	2 11/16	1124	749	7 7/8	19 31/64	9 49/64	7 7/64	13 25/64	± 6 13/16	272
CYW 68	2 13/16	1248	832	8 17/64	20 43/64	10 9/32	7 11/16	14 11/64	± 7 13/64	323
CYW 72	3	1405	937	8 55/64	21 27/32	10 63/64	7 31/32	14 61/64	± 7 11/16	389
CYW 76	3 1/8	1574	1049	9 1/4	23 1/32	11 1/2	8 47/64	15 3/4	± 7 63/64	450
CYW 80	3 5/16	1731	1154	9 27/32	24 7/32	12 13/64	8 57/64	16 9/64	± 8 15/32	518
CYW 84	3 7/16	1911	1274	10 15/64	25 25/64	12 23/32	9 1/4	16 17/32	± 8 55/64	579
CYW 88	3 5/8	2113	1409	10 5/8	26 37/64	13 15/64	10	17 21/64	± 9 1/4	665
CYW 92	3 3/4	2293	1529	11 7/32	27 3/4	13 15/16	10 35/64	18 7/64	± 9 21/32	768
CYW 96	3 15/16	2495	1664	11 39/64	28 15/16	14 29/64	10 53/64	19 19/64	± 10 3/64	882
CYW 100	4 1/8	2698	1798	12 13/64	30 1/8	15 5/32	11 27/64	20 5/64	± 10 17/32	1014
CYW 104	4 1/4	2923	1948	12 19/32	31 19/64	15 43/64	11 51/64	20 15/32	± 10 29/32	1102
CYW 108	4 7/16	3147	2098	13 3/16	32 31/64	16 11/32	12 17/32	21 21/32	± 11 7/32	1266
CYW 112	4 9/16	3417	2278	13 25/32	33 21/32	17 3/32	12 43/64	22 7/16	± 11 45/64	1417
CYW 116	4 3/4	3631	2420	14 11/64	34 27/32	17 9/16	12 15/16	22 53/64	± 12 3/32	1563
CYW 120	4 7/8	3912	2608	14 9/16	36 1/32	18 7/64	13 5/32	23 15/64	± 12 37/64	1626
CYW 124	5	4148	2765	15 5/32	37 13/64	18 25/32	13 57/64	23 5/8	± 12 61/64	1813
CYW 128	5 3/16	4451	2967	15 35/64	38 25/64	19 19/64	14 13/64	24 13/32	± 13 11/32	1987
CYW 132	5 3/8	4699	3132	16 9/64	39 9/16	20	14 23/64	25 13/64	± 13 53/64	2191
CYW 136	5 1/2	4991	3327	16 17/32	40 3/4	20 33/64	15 9/16	25 19/32	± 14 7/32	2362
CYW 140	5 11/16	5283	3522	17 1/8	41 59/64	21 7/32	15 21/32	26 49/64	± 14 45/64	2626
CYW 144	5 13/16	5587	3724	17 33/64	43 7/64	21 47/64	15 31/32	27 9/16	± 15 5/64	2848
CYW 148	6	5901	3934	17 29/32	44 21/64	22 1/4	16 37/64	27 61/64	± 15 31/64	3017
CYW 152	6 1/8	6227	4151	18 1/2	45 7/16	22 61/64	16 23/32	28 47/64	± 15 15/16	3297
CYW 156	6 5/16	6553	4369	19 3/32	46 37/64	23 21/32	17 17/64	29 17/32	± 16 19/64	3614

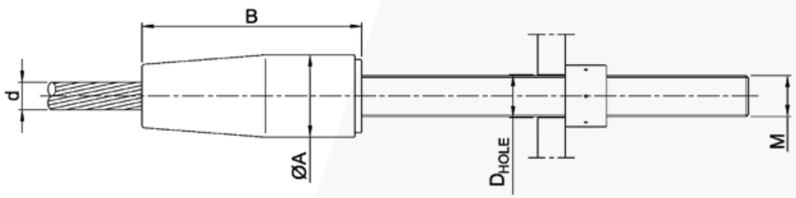
- d_{max} — Max Strand Diameter
- N_{uk} — Characteristic Breaking Strength
- N_{Rd} — Design Resistance
- D_{HOLE} — Hole Diameter
- Adj. — Adjustment

(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} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	M (in)	Mass (lb)
CYB 12	9/16	36	24	1 37/64	4 7/32	27/32	25/32 x 3/32	1
CYB 16	3/4	63	42	2 11/64	5 33/64	1 1/32	15/16 x 1/8	3
CYB 20	15/16	99	66	2 9/16	6 11/16	1 17/64	1 3/16 x 9/64	5
CYB 24	1 1/8	139	93	2 61/64	7 7/8	1 1/2	1 27/64 x 1/8	8
CYB 28	1 1/4	191	127	3 35/64	9 1/16	1 49/64	1 21/32 x 1/8	14
CYB 32	1 7/16	259	172	3 15/16	10 15/64	2	1 57/64 x 1/8	19
CYB 36	1 9/16	315	210	4 21/64	11 39/64	2 11/64	2 3/64 x 1/8	26
CYB 40	1 3/4	393	262	4 23/32	12 51/64	2 31/64	2 23/64 x 5/32	33
CYB 44	1 7/8	472	315	5 1/8	14 11/64	2 41/64	2 33/64 x 5/32	44
CYB 48	2	562	375	5 45/64	15 23/64	2 61/64	2 53/64 x 5/32	59
CYB 52	2 3/16	663	442	6 7/64	16 17/32	3 5/16	3 5/32 x 15/64	71
CYB 56	2 3/8	764	510	6 1/2	17 23/32	3 1/2	3 11/32 x 15/64	86
CYB 60	2 1/2	877	585	7 3/32	18 57/64	3 45/64	3 35/64 x 15/64	111
CYB 64	2 11/16	1012	674	7 31/64	20 5/64	3 57/64	3 47/64 x 15/64	132
CYB 68	2 13/16	1124	749	7 7/8	21 17/64	4 19/64	4 9/64 x 15/64	151
CYB 72	3	1259	839	8 17/64	22 41/64	4 31/64	4 21/64 x 15/64	176
CYB 76	3 1/8	1416	944	8 55/64	23 13/16	4 7/8	4 23/32 x 15/64	213
CYB 80	3 5/16	1574	1049	9 1/4	25	5 1/8	4 59/64 x 15/64	245
CYB 84	3 7/16	1731	1154	9 41/64	26 3/16	5 5/16	5 1/8 x 15/64	279
CYB 88	3 5/8	1911	1274	10 15/64	27 23/64	5 33/64	5 5/16 x 15/64	331
CYB 92	3 3/4	2091	1394	10 5/8	28 35/64	5 45/64	5 33/64 x 15/64	371
CYB 96	3 15/16	2271	1514	11 1/32	29 23/32	5 29/32	5 45/64 x 15/64	414
CYB 100	4 1/8	2450	1634	11 39/64	30 29/32	6 19/64	6 7/64 x 15/64	481
CYB 104	4 1/4	2653	1768	12	32 3/32	6 1/2	6 19/64 x 15/64	533
CYB 108	4 7/16	2855	1903	12 13/32	33 17/64	6 11/16	6 1/2 x 5/16	588
CYB 112	4 9/16	3125	2083	12 51/64	34 29/64	7 3/32	6 57/64 x 5/16	641
CYB 116	4 3/4	3350	2233	13 25/64	35 5/8	7 9/32	7 3/32 x 5/16	731
CYB 120	4 7/8	3574	2383	13 25/32	36 13/16	7 31/64	7 9/32 x 5/16	803
CYB 124	5	3822	2548	14 11/64	37 63/64	7 43/64	7 31/64 x 5/16	876
CYB 128	5 3/16	4069	2713	14 9/16	39 11/64	8 15/32	8 17/64 x 5/16	930
CYB 132	5 3/8	4316	2878	14 61/64	40 23/64	8 55/64	8 21/32 x 25/64	1001
CYB 136	5 1/2	4586	3057	15 23/64	41 17/32	9 1/4	9 1/16 x 25/64	1077
CYB 140	5 11/16	4856	3237	16 9/64	42 23/32	9 1/4	9 1/16 x 25/64	1260
CYB 144	5 13/16	5148	3432	16 17/32	43 57/64	9 41/64	9 29/64 x 25/64	1349
CYB 148	6	5463	3642	16 47/64	44 7/8	9 27/32	9 41/64 x 25/64	1395
CYB 152	6 1/8	5755	3837	17 1/8	46 1/16	10 3/64	9 27/32 x 25/64	1497
CYB 156	6 5/16	6047	4032	17 33/64	47 1/4	10 15/64	10 3/64 x 25/64	1605

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

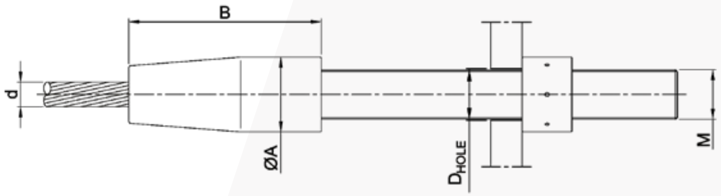
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

(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

CYM



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	M (in)	Mass (lb)
CYM 12	9/16	43	28	1 37/64	3 57/64	1 9/64	1 1/16 x 1/8	1
CYM 16	3/4	72	48	2 11/64	5 13/64	1 1/2	1 27/64 x 1/8	3
CYM 20	15/16	110	73	2 9/16	6 39/64	1 49/64	1 21/32 x 1/8	5
CYM 24	1 1/8	157	105	2 61/64	7 29/32	2 21/64	1 31/32 x 1/8	8
CYM 28	1 1/4	218	145	3 35/64	9 1/64	2 21/64	2 13/64 x 5/32	12
CYM 32	1 7/16	289	193	3 15/16	10 25/64	2 41/64	2 33/64 x 5/32	17
CYM 36	1 9/16	363	242	4 21/64	11 57/64	2 61/64	2 53/64 x 5/32	24
CYM 40	1 3/4	440	293	4 23/32	13 25/64	3 5/16	3 5/32 x 5/32	32
CYM 44	1 7/8	528	352	5 1/8	14 7/8	3 45/64	3 35/64 x 15/64	39
CYM 48	2	622	414	5 45/64	16 3/16	4 3/32	3 15/16 x 15/64	55
CYM 52	2 3/16	742	495	6 7/64	17 31/64	4 19/64	4 9/64 x 15/64	68
CYM 56	2 3/8	877	585	6 1/2	18 31/32	4 11/16	4 17/32 x 15/64	82
CYM 60	2 1/2	989	659	7 3/32	20 9/32	4 7/8	4 23/32 x 15/64	110
CYM 64	2 11/16	1124	749	7 31/64	21 37/64	5 5/16	5 1/8 x 15/64	128
CYM 68	2 13/16	1248	832	7 7/8	22 43/64	5 33/64	5 5/16 x 15/64	149
CYM 72	3	1405	937	8 17/64	24 11/64	5 45/64	5 33/64 x 15/64	176
CYM 76	3 1/8	1574	1049	8 55/64	25 15/32	6 7/64	5 29/32 x 15/64	214
CYM 80	3 5/16	1731	1154	9 1/4	26 49/64	6 1/2	6 19/64 x 15/64	243
CYM 84	3 7/16	1911	1274	9 41/64	28 55/64	6 11/16	6 1/2 x 15/64	288
CYM 88	3 5/8	2113	1409	10 15/64	30 5/32	7 3/32	6 57/64 x 15/64	340
CYM 92	3 3/4	2293	1529	10 5/8	31 29/64	7 31/64	7 9/32 x 5/16	376
CYM 96	3 15/16	2495	1664	11 1/32	32 3/4	7 43/64	7 31/64 x 5/16	422
CYM 100	4 1/8	2698	1798	11 39/64	34 1/16	8 5/64	7 7/8 x 5/16	492
CYM 104	4 1/4	2923	1948	12	35 23/64	8 17/64	8 5/64 x 5/16	549
CYM 108	4 7/16	3147	2098	12 13/32	36 21/32	8 15/32	8 17/64 x 5/16	609
CYM 112	4 9/16	3417	2278	12 51/64	37 61/64	8 55/64	8 21/32 x 5/16	662
CYM 116	4 3/4	3631	2420	13 25/64	39 1/4	9 1/4	9 1/16 x 5/16	751
CYM 120	4 7/8	3912	2608	13 25/32	40 35/64	9 41/64	9 29/64 x 5/16	816
CYM 124	5	4148	2765	14 11/64	41 27/32	9 27/32	9 41/64 x 5/16	896
CYM 128	5 3/16	4451	2967	14 9/16	43 5/32	10 9/32	10 3/64 x 5/16	965
CYM 132	5 3/8	4699	3132	14 61/64	44 29/64	10 15/32	10 15/64 x 5/16	1051
CYM 136	5 1/2	4991	3327	15 23/64	45 3/4	10 55/64	10 5/8 x 5/16	1127
CYM 140	5 11/16	5283	3522	16 9/64	47 1/4	11 17/64	11 1/32 x 25/64	1313
CYM 144	5 13/16	5587	3724	16 17/32	48 35/64	11 29/64	11 7/32 x 25/64	1422
CYM 148	6	5901	3934	16 59/64	49 27/32	11 11/16	11 27/64 x 25/64	1533
CYM 152	6 1/8	6227	4151	17 33/64	51 9/64	12 3/32	11 13/16 x 25/64	1688
CYM 156	6 5/16	6553	4369	17 29/32	52 7/16	12 31/64	12 13/64 x 25/64	1792

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

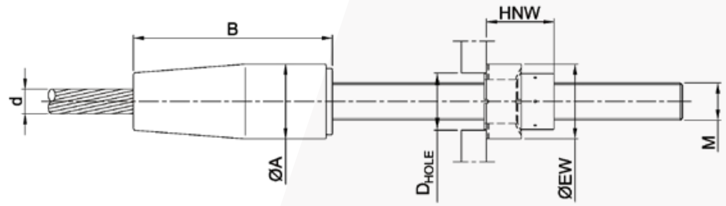
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

HIGH STRENGTH STEEL

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

CYR



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	ØEW (in)	HNW (in)	M (in)	Mass (lb)
CYR 12	9/16	36	24	1 37/64	4 7/32	1 7/32	1 37/64	1 17/32	25/32 x 3/32	1
CYR 16	3/4	63	42	2 11/64	5 33/64	1 1/2	1 31/32	1 7/8	15/16 x 1/8	4
CYR 20	15/16	99	66	2 9/16	6 11/16	1 13/16	2 23/64	2 5/64	1 3/16 x 9/64	6
CYR 24	1 1/8	139	93	2 61/64	7 7/8	2 11/64	3 5/32	2 31/64	1 27/64 x 1/8	10
CYR 28	1 1/4	191	127	3 35/64	9 1/16	2 9/16	3 35/64	3 5/64	1 21/32 x 1/8	17
CYR 32	1 7/16	259	172	3 15/16	10 15/64	2 29/32	3 15/16	3 15/32	1 57/64 x 1/8	23
CYR 36	1 9/16	315	210	4 21/64	11 39/64	3 3/16	4 21/64	3 47/64	2 3/64 x 1/8	31
CYR 40	1 3/4	393	262	4 23/32	12 51/64	3 5/8	4 23/32	4 1/4	2 23/64 x 5/32	40
CYR 44	1 7/8	472	315	5 1/8	14 11/64	3 57/64	5 1/8	4 19/32	2 33/64 x 5/32	53
CYR 48	2	562	375	5 45/64	15 23/64	4 3/8	5 29/32	5 3/64	2 53/64 x 5/32	72
CYR 52	2 3/16	663	442	6 7/64	16 17/32	4 51/64	6 11/16	5 17/32	3 5/32 x 15/64	90
CYR 56	2 3/8	764	510	6 1/2	17 23/32	5 1/8	6 11/16	6 9/64	3 11/32 x 15/64	106
CYR 60	2 1/2	877	585	7 3/32	18 57/64	5 7/16	7 3/32	6 27/64	3 35/64 x 15/64	136
CYR 64	2 11/16	1012	674	7 31/64	20 5/64	5 3/4	7 31/64	6 31/32	3 47/64 x 15/64	162
CYR 68	2 13/16	1124	749	7 7/8	21 17/64	6 19/64	8 17/64	7 21/64	4 9/64 x 15/64	189
CYR 72	3	1259	839	8 17/64	22 41/64	6 39/64	8 21/32	7 15/16	4 21/64 x 15/64	222
CYR 76	3 1/8	1416	944	8 55/64	23 13/16	7 1/8	9 29/64	8 9/32	4 23/32 x 15/64	267
CYR 80	3 5/16	1574	1049	9 1/4	25	7 7/16	9 27/32	8 13/16	4 59/64 x 15/64	309
CYR 84	3 7/16	1731	1154	9 41/64	26 3/16	7 3/4	10 15/64	9 1/32	5 1/8 x 15/64	348
CYR 88	3 5/8	1911	1274	10 15/64	27 23/64	8 7/64	10 5/8	9 33/64	5 5/16 x 15/64	413
CYR 92	3 3/4	2091	1394	10 5/8	28 35/64	8 25/64	11 1/32	9 23/32	5 33/64 x 15/64	459
CYR 96	3 15/16	2271	1514	11 1/32	29 23/32	8 47/64	11 27/64	10 17/64	5 45/64 x 15/64	516
CYR 100	4 1/8	2450	1634	11 39/64	30 29/32	9 1/4	12 13/64	10 39/64	6 7/64 x 15/64	598
CYR 104	4 1/4	2653	1768	12	32 3/32	9 9/16	12 19/32	11 7/32	6 19/64 x 15/64	666
CYR 108	4 7/16	2855	1903	12 13/32	33 17/64	9 7/8	12 63/64	11 3/4	6 1/2 x 5/16	739
CYR 112	4 9/16	3125	2083	12 51/64	34 29/64	10 7/16	13 25/32	12 3/32	6 57/64 x 5/16	811
CYR 116	4 3/4	3350	2233	13 25/64	35 5/8	10 3/4	14 11/64	12 45/64	7 3/32 x 5/16	923
CYR 120	4 7/8	3574	2383	13 25/32	36 13/16	11 1/16	14 9/16	12 55/64	7 9/32 x 5/16	1005
CYR 124	5	3822	2548	14 11/64	37 63/64	11 3/8	14 61/64	13 29/64	7 31/64 x 5/16	1103
CYR 128	5 3/16	4069	2713	14 9/16	39 11/64	12 23/64	16 9/64	14 7/64	8 17/64 x 5/16	1189
CYR 132	5 3/8	4316	2878	14 61/64	40 23/64	12 7/8	16 59/64	14 29/64	8 21/32 x 25/64	1286
CYR 136	5 1/2	4586	3057	15 23/64	41 17/32	13 25/64	17 23/32	14 51/64	9 1/16 x 25/64	1390
CYR 140	5 11/16	4856	3237	16 9/64	42 23/32	13 1/2	17 23/32	15 13/64	9 1/16 x 25/64	1591
CYR 144	5 13/16	5148	3432	16 17/32	43 57/64	14 1/64	18 1/2	15 35/64	9 29/64 x 25/64	1712
CYR 148	6	5463	3642	16 47/64	44 7/8	14 21/64	18 57/64	16 7/64	9 41/64 x 25/64	1794
CYR 152	6 1/8	5755	3837	17 1/8	46 1/16	14 41/64	19 19/64	16 19/64	9 27/32 x 25/64	1912
CYR 156	6 5/16	6047	4032	17 33/64	47 1/4	14 61/64	19 11/16	16 57/64	10 3/64 x 25/64	2059

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Mass Mass Without Threaded Rod

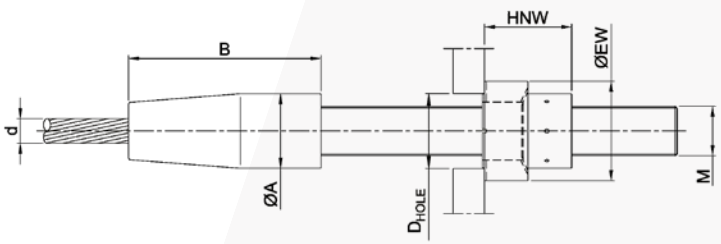
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

(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, SPHERICAL NUT AND WASHER

CYV



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	ØEW (in)	HNW (in)	M (in)	Mass (lb)
CYV 12	9/16	43	28	1 37/64	3 57/64	1 1/2	2 23/64	1 25/32	1 1/16 x 1/8	2
CYV 16	3/4	72	48	2 11/64	5 13/64	2	3 5/32	2 9/32	1 27/64 x 1/8	4
CYV 20	15/16	110	73	2 9/16	6 39/64	2 23/64	3 35/64	2 31/64	1 21/32 x 1/8	7
CYV 24	1 1/8	157	105	2 61/64	7 29/32	3 5/64	4 23/32	3 11/64	1 31/32 x 1/8	12
CYV 28	1 1/4	218	145	3 35/64	9 1/64	3 5/32	4 23/32	3 37/64	2 13/64 x 5/32	18
CYV 32	1 7/16	289	193	3 15/16	10 25/64	3 5/8	5 1/8	4 5/64	2 33/64 x 5/32	24
CYV 36	1 9/16	363	242	4 21/64	11 57/64	4 1/16	5 33/64	4 29/64	2 53/64 x 5/32	33
CYV 40	1 3/4	440	293	4 23/32	13 25/64	4 31/64	5 29/32	4 61/64	3 5/32 x 5/32	42
CYV 44	1 7/8	528	352	5 1/8	14 7/8	5 3/64	7 31/64	5 7/16	3 35/64 x 15/64	60
CYV 48	2	622	414	5 45/64	16 3/16	5 35/64	8 17/64	5 63/64	3 15/16 x 15/64	82
CYV 52	2 3/16	742	495	6 7/64	17 31/64	5 29/32	9 1/16	6 11/32	4 9/64 x 15/64	106
CYV 56	2 3/8	877	585	6 1/2	18 31/32	6 27/64	9 27/32	7 5/64	4 17/32 x 15/64	130
CYV 60	2 1/2	989	659	7 3/32	20 9/32	6 47/64	9 29/64	7 1/2	4 23/32 x 15/64	154
CYV 64	2 11/16	1124	749	7 31/64	21 37/64	7 9/32	10 15/64	8 15/64	5 1/8 x 15/64	185
CYV 68	2 13/16	1248	832	7 7/8	22 43/64	7 19/32	10 5/8	8 21/64	5 5/16 x 15/64	212
CYV 72	3	1405	937	8 17/64	24 11/64	7 29/32	11 1/32	8 59/64	5 33/64 x 15/64	251
CYV 76	3 1/8	1574	1049	8 55/64	25 15/32	8 27/64	11 13/16	9 17/64	5 29/32 x 15/64	300
CYV 80	3 5/16	1731	1154	9 1/4	26 49/64	9 1/64	12 19/32	10 1/32	6 19/64 x 15/64	348
CYV 84	3 7/16	1911	1274	9 41/64	28 55/64	9 19/64	12 63/64	10 11/64	6 1/2 x 15/64	401
CYV 88	3 5/8	2113	1409	10 15/64	30 5/32	9 27/32	13 25/32	10 59/64	6 57/64 x 15/64	478
CYV 92	3 3/4	2293	1529	10 5/8	31 29/64	10 23/64	14 9/16	11 9/32	7 9/32 x 5/16	531
CYV 96	3 15/16	2495	1664	11 1/32	32 3/4	10 45/64	14 61/64	11 7/8	7 31/64 x 5/16	600
CYV 100	4 1/8	2698	1798	11 39/64	34 1/16	11 7/32	15 23/64	12 7/32	7 7/8 x 5/16	675
CYV 104	4 1/4	2923	1948	12	35 23/64	11 17/32	16 9/64	12 23/32	8 5/64 x 5/16	769
CYV 108	4 7/16	3147	2098	12 13/32	36 21/32	11 57/64	16 9/64	13 5/16	8 17/64 x 5/16	840
CYV 112	4 9/16	3417	2278	12 51/64	37 61/64	12 13/32	16 59/64	13 43/64	8 21/32 x 5/16	917
CYV 116	4 3/4	3631	2420	13 25/64	39 1/4	12 61/64	17 23/32	14 13/32	9 1/16 x 5/16	1047
CYV 120	4 7/8	3912	2608	13 25/32	40 35/64	13 15/32	18 1/2	14 49/64	9 29/64 x 5/16	1140
CYV 124	5	4148	2765	14 11/64	41 27/32	13 25/32	19 19/64	15 5/16	9 41/64 x 5/16	1279
CYV 128	5 3/16	4451	2967	14 9/16	43 5/32	14 19/64	20 5/64	15 11/16	10 3/64 x 5/16	1380
CYV 132	5 3/8	4699	3132	14 61/64	44 29/64	14 39/64	20 5/64	15 29/32	10 15/64 x 5/16	1457
CYV 136	5 1/2	4991	3327	15 23/64	45 3/4	15 1/8	20 55/64	16 3/16	10 5/8 x 5/16	1567
CYV 140	5 11/16	5283	3522	16 9/64	47 1/4	15 43/64	21 21/32	16 15/16	11 1/32 x 25/64	1814
CYV 144	5 13/16	5587	3724	16 17/32	48 35/64	15 63/64	22 3/64	17 3/32	11 7/32 x 25/64	1942
CYV 148	6	5901	3934	16 59/64	49 27/32	16 19/64	22 7/16	17 43/64	11 27/64 x 25/64	2101
CYV 152	6 1/8	6227	4151	17 33/64	51 9/64	16 13/16	23 15/64	18 1/32	11 13/16 x 25/64	2297
CYV 156	6 5/16	6553	4369	17 29/32	52 7/16	17 23/64	24 1/64	18 25/32	12 13/64 x 25/64	2476

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

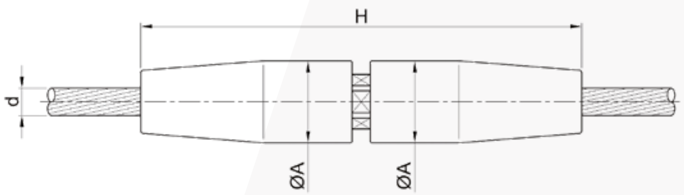
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

(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.

CYLINDRICAL SOCKET WITH COUPLER

CYC



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	H (in)	Mass (lb)
CYC 12	9/16	43	28	1 37/64	8 1/2	3
CYC 16	3/4	72	48	2 11/64	11 3/16	7
CYC 20	15/16	110	73	2 9/16	13 25/32	12
CYC 24	1 1/8	157	105	2 61/64	16 37/64	20
CYC 28	1 1/4	218	145	3 35/64	18 31/32	31
CYC 32	1 7/16	289	193	3 15/16	21 13/16	44
CYC 36	1 9/16	363	242	4 21/64	24 61/64	60
CYC 40	1 3/4	440	293	4 23/32	26 31/32	79
CYC 44	1 7/8	528	352	5 1/8	30 15/16	104
CYC 48	2	622	414	5 45/64	33 35/64	146
CYC 52	2 3/16	742	495	6 7/64	36 9/64	179
CYC 56	2 3/8	877	585	6 1/2	39 17/32	220
CYC 60	2 1/2	989	659	7 3/32	42 1/8	282
CYC 64	2 11/16	1124	749	7 31/64	44 23/32	333
CYC 68	2 13/16	1248	832	7 7/8	47 21/64	388
CYC 72	3	1405	937	8 17/64	50 45/64	459
CYC 76	3 1/8	1574	1049	8 55/64	53 5/16	556
CYC 80	3 5/16	1731	1154	9 1/4	56 19/64	639
CYC 84	3 7/16	1911	1274	9 41/64	60 15/32	758
CYC 88	3 5/8	2113	1409	10 15/64	63 15/32	897
CYC 92	3 3/4	2293	1529	10 5/8	66 27/32	1012
CYC 96	3 15/16	2495	1664	11 1/32	69 29/64	1129
CYC 100	4 1/8	2698	1798	11 39/64	72 3/64	1307
CYC 104	4 1/4	2923	1948	12	74 41/64	1448
CYC 108	4 7/16	3147	2098	12 13/32	77 1/4	1596
CYC 112	4 9/16	3417	2278	12 51/64	79 27/32	1750
CYC 116	4 3/4	3631	2420	13 25/64	82 7/16	1982
CYC 120	4 7/8	3912	2608	13 25/32	85 3/64	2169
CYC 124	5	4148	2765	14 11/64	88 27/64	2381
CYC 128	5 3/16	4451	2967	14 9/16	91 1/32	2584
CYC 132	5 3/8	4699	3132	14 61/64	93 5/8	2800
CYC 136	5 1/2	4991	3327	15 23/64	96 7/32	3025
CYC 140	5 11/16	5283	3522	16 9/64	99 13/32	3477
CYC 144	5 13/16	5587	3724	16 17/32	102	3746
CYC 148	6	5901	3934	16 59/64	104 39/64	4021
CYC 152	6 1/8	6227	4151	17 33/64	107 13/64	4418
CYC 156	6 5/16	6553	4369	17 29/32	109 51/64	4722

(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$

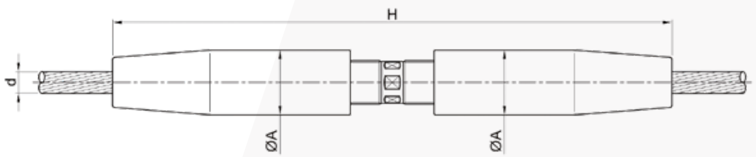
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

ADJUSTABLE CYLINDRICAL SOCKET WITH COUPLER

CYA

PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	H (in)	Adj. (in)	Mass (lb)
CYA 12	9/16	43	28	1 37/64	12 53/64	±1 3/16	4
CYA 16	3/4	72	48	2 11/64	16 7/32	±1 37/64	11
CYA 20	15/16	110	73	2 9/16	19 59/64	±1 31/32	18
CYA 24	1 1/8	157	105	2 61/64	24 9/16	±2 9/16	31
CYA 28	1 1/4	218	145	3 35/64	27 29/32	±2 61/64	46
CYA 32	1 7/16	289	193	3 15/16	32 19/32	±3 35/64	66
CYA 36	1 9/16	363	242	4 21/64	37	±3 15/16	90
CYA 40	1 3/4	440	293	4 23/32	39 31/64	±4 21/64	117
CYA 44	1 7/8	528	352	5 1/8	44 7/8	±4 23/32	150
CYA 48	2	622	414	5 45/64	49 9/64	±5 1/8	214
CYA 52	2 3/16	742	495	6 7/64	53 25/64	±5 33/64	258
CYA 56	2 3/8	877	585	6 1/2	57 1/4	±5 29/32	315
CYA 60	2 1/2	989	659	7 3/32	60 5/16	±6 19/64	406
CYA 64	2 11/16	1124	749	7 31/64	65 3/4	±7 3/32	492
CYA 68	2 13/16	1248	832	7 7/8	70 25/64	±7 7/8	582
CYA 72	3	1405	937	8 17/64	74 1/4	±7 7/8	670
CYA 76	3 1/8	1574	1049	8 55/64	77 21/64	±7 7/8	807
CYA 80	3 5/16	1731	1154	9 1/4	80 25/32	±7 7/8	915
CYA 84	3 7/16	1911	1274	9 41/64	84 1/4	±7 7/8	1052
CYA 88	3 5/8	2113	1409	10 15/64	87 21/64	±7 7/8	1230
CYA 92	3 3/4	2293	1529	10 5/8	92 1/8	±7 7/8	1387
CYA 96	3 15/16	2495	1664	11 1/32	95 13/64	±7 7/8	1539
CYA 100	4 1/8	2698	1798	11 39/64	97 7/8	±7 7/8	1768
CYA 104	4 1/4	2923	1948	12	100 15/16	±7 7/8	1951
CYA 108	4 7/16	3147	2098	12 13/32	103 5/8	±7 7/8	2132
CYA 112	4 9/16	3417	2278	12 51/64	105 29/32	±7 7/8	2317
CYA 116	4 3/4	3631	2420	13 25/64	108 3/16	±7 7/8	2597
CYA 120	4 7/8	3912	2608	13 25/32	110 15/32	±7 7/8	2815
CYA 124	5	4148	2765	14 11/64	113 15/16	±7 7/8	3067
CYA 128	5 3/16	4451	2967	14 9/16	116 39/64	±8 17/64	3316
CYA 132	5 3/8	4699	3132	14 61/64	118 13/16	±8 17/64	3556
CYA 136	5 1/2	4991	3327	15 23/64	120 15/16	±8 17/64	3814
CYA 140	5 11/16	5283	3522	16 9/64	123 13/16	±8 17/64	4306
CYA 144	5 13/16	5587	3724	16 17/32	125 15/16	±8 17/64	4597
CYA 148	6	5901	3934	16 59/64	127 9/32	±8 17/64	4945
CYA 152	6 1/8	6227	4151	17 33/64	129 51/64	±8 17/64	5441
CYA 156	6 5/16	6553	4369	17 29/32	132 21/64	±8 17/64	5827



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

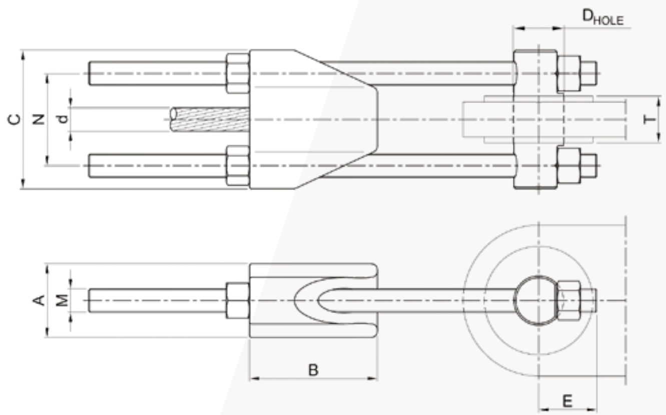
Adj. Adjustment

(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

BRC



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	A (in)	B (in)	C (in)	D_{HOLE} (in)	E (in)	M (in)	N (in)	T_{min} (in)	T_{max} (in)	Adj. (in)	Mass (lb)
BRC 12	9/16	36	24	1 37/64	2 19/32	3 5/32	1 17/64	1 29/64	5/8 x 5/64	2 13/64	5/8	55/64	± 5 29/32	8
BRC 16	3/4	63	42	2 11/64	3 15/32	4 3/32	1 1/2	1 49/64	25/32 x 1/8	2 53/64	15/16	1 3/16	± 5 29/32	15
BRC 20	15/16	99	66	2 9/16	4 21/64	4 61/64	1 27/32	2 11/64	15/16 x 1/8	3 25/64	1 3/16	1 29/64	± 5 29/32	24
BRC 24	1 1/8	139	93	3 5/32	5 13/64	5 29/32	2 13/64	2 9/16	1 1/16 x 1/8	4 1/64	1 1/2	1 49/64	± 5 29/32	39
BRC 28	1 1/4	191	127	3 35/64	6 1/16	6 27/32	2 19/32	3 5/64	1 19/64 x 5/32	4 41/64	1 31/32	2 13/64	± 5 29/32	59
BRC 32	1 7/16	259	172	4 9/64	6 59/64	7 51/64	2 53/64	3 11/32	1 27/64 x 1/8	5 9/32	2 11/64	2 23/64	± 7 7/8	85
BRC 36	1 9/16	315	210	4 23/32	7 51/64	8 21/32	3 5/32	3 45/64	1 17/32 x 1/8	5 53/64	2 9/16	2 3/4	± 7 7/8	110
BRC 40	1 3/4	393	262	5 1/8	8 21/32	9 17/32	3 37/64	4 3/32	1 21/32 x 1/8	6 3/8	2 3/4	2 61/64	± 7 7/8	154
BRC 44	1 7/8	472	315	5 33/64	9 17/32	10 35/64	3 13/16	4 31/64	1 57/64 x 1/8	7 3/32	3 5/32	3 11/32	± 7 7/8	203
BRC 48	2	562	375	5 29/32	10 25/64	11 1/2	4 7/32	4 59/64	2 3/64 x 1/8	7 23/32	3 35/64	3 47/64	± 7 7/8	251
BRC 52	2 3/16	663	442	6 11/16	11 17/64	12 7/16	4 39/64	5 23/64	2 13/64 x 5/32	8 11/32	3 47/64	4 9/64	± 7 7/8	305
BRC 56	2 3/8	764	510	7 3/32	12 1/8	13 5/16	4 51/64	5 43/64	2 23/64 x 5/32	8 57/64	4 9/64	4 21/64	± 7 7/8	361
BRC 60	2 1/2	877	585	7 31/64	12 63/64	14 3/32	5 5/32	5 29/32	2 23/64 x 5/32	9 3/8	4 17/32	4 23/32	± 7 7/8	399
BRC 64	2 11/16	1012	674	7 7/8	13 55/64	15 1/8	5 35/64	6 1/2	2 43/64 x 5/32	10 5/64	4 59/64	5 1/8	± 9 27/32	502
BRC 68	2 13/16	1124	749	8 21/32	14 23/32	16 1/16	5 15/16	6 59/64	2 53/64 x 5/32	10 45/64	5 1/8	5 5/16	± 9 27/32	596
BRC 72	3	1259	839	9 1/16	15 19/32	17 3/32	6 3/16	7 1/4	2 63/64 x 5/32	11 27/64	5 33/64	5 45/64	± 9 27/32	684
BRC 76	3 1/8	1416	944	9 29/64	16 29/64	17 61/64	6 47/64	7 51/64	3 5/32 x 5/32	11 31/32	5 29/32	6 7/64	± 9 27/32	792
BRC 80	3 5/16	1574	1049	9 27/32	17 21/64	18 57/64	7 11/64	8 17/64	3 11/32 x 5/32	12 19/32	6 7/64	6 1/2	± 9 27/32	1094
BRC 84	3 7/16	1731	1154	10 5/8	18 3/16	19 27/32	7 33/64	8 45/64	3 35/64 x 15/64	13 15/64	6 1/2	6 11/16	± 9 27/32	1236
BRC 88	3 5/8	1911	1274	11 1/32	19 1/16	20 55/64	7 61/64	9 11/64	3 47/64 x 15/64	13 15/16	6 57/64	7 3/32	± 9 27/32	1407
BRC 92	3 3/4	2091	1394	11 27/64	19 59/64	22 3/64	8 11/32	9 7/8	4 9/64 x 15/64	14 51/64	7 9/32	7 31/64	± 9 27/32	1678
BRC 96	3 15/16	2271	1514	11 13/16	20 25/32	22 63/64	8 47/64	10 23/64	4 21/64 x 15/64	15 7/16	7 31/64	7 7/8	± 9 27/32	1878
BRC 100	4 1/8	2450	1634	12 13/64	21 21/32	23 15/16	9 9/64	10 25/32	4 17/32 x 15/64	16 1/16	7 43/64	8 5/64	± 11 13/16	2092
BRC 104	4 1/4	2653	1768	12 63/64	22 33/64	24 7/8	9 17/32	11 17/64	4 23/32 x 15/64	16 11/16	8 5/64	8 15/32	± 11 13/16	2344
BRC 108	4 7/16	2855	1903	13 25/64	23 25/64	25 43/64	9 59/64	11 17/32	4 23/32 x 15/64	17 11/64	8 17/64	8 55/64	± 11 13/16	2480
BRC 112	4 9/16	3125	2083	13 25/32	24 1/4	26 27/32	10 45/64	12 31/64	5 1/8 x 15/64	18 1/32	8 15/32	9 1/16	± 11 13/16	2897
BRC 116	4 3/4	3350	2233	14 11/64	25 1/8	27 41/64	11 7/64	12 3/4	5 1/8 x 15/64	18 1/2	8 55/64	9 29/64	± 11 13/16	3058
BRC 120	4 7/8	3574	2383	14 61/64	25 63/64	28 37/64	11 1/2	13 15/64	5 5/16 x 15/64	19 9/64	9 1/16	9 27/32	± 11 13/16	3380
BRC 124	5	3822	2548	15 23/64	26 27/32	29 17/32	11 59/64	13 45/64	5 33/64 x 15/64	19 49/64	9 29/64	10 3/64	± 11 13/16	3689
BRC 128	5 3/16	4069	2713	15 3/4	27 23/32	30 15/32	12 21/64	14 11/64	5 45/64 x 15/64	20 25/64	9 27/32	10 7/16	± 11 13/16	4016
BRC 132	5 3/8	4316	2878	16 9/64	28 37/64	31 1/2	12 23/32	14 41/64	5 29/32 x 15/64	21 7/64	10 3/64	10 5/8	± 11 13/16	4367
BRC 136	5 1/2	4586	3057	16 59/64	29 29/64	32 43/64	13 7/64	15 5/16	6 19/64 x 15/64	21 31/32	10 7/16	11 1/32	± 11 13/16	4921
BRC 140	5 11/16	4856	3237	17 21/64	30 5/16	33 25/32	13 1/2	15 63/64	6 11/16 x 15/64	22 3/4	10 5/8	11 27/64	± 11 13/16	5466
BRC 144	5 13/16	5148	3432	17 23/32	31 3/16	35 3/64	13 57/64	16 21/32	7 3/32 x 15/64	23 45/64	11 1/32	11 13/16	± 11 13/16	6060
BRC 148	6	5463	3642	18 7/64	32 3/64	35 63/64	14 19/64	17 1/8	7 9/32 x 15/64	24 21/64	11 27/64	12 13/64	± 11 13/16	6499
BRC 152	6 1/8	5755	3837	18 57/64	32 29/32	36 59/64	14 11/16	17 9/16	7 31/64 x 15/64	24 61/64	11 13/16	12 19/32	± 11 13/16	7006
BRC 156	6 5/16	6047	4032	19 19/64	33 25/32	37 7/8	15 5/64	18 1/32	7 43/64 x 15/64	25 19/32	12 13/64	12 63/64	± 11 13/16	7491

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Adj. Adjustment

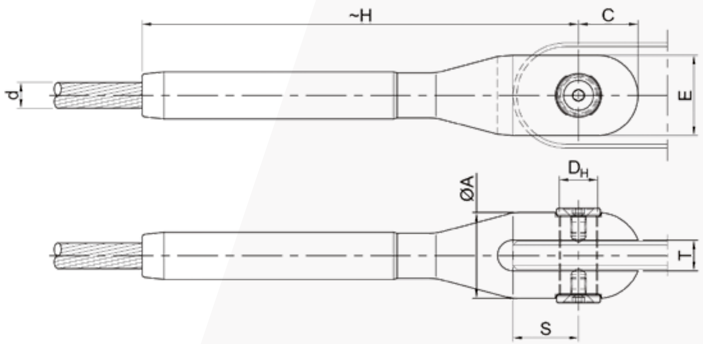
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

OPEN SWAGED SOCKET
42CrMo4

MAC

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	DH (in)	S (in)	T (in)	Mass (lb)
MAC 6	8	5	1/4	29/32	4 1/64	39/64	13/16	25/64	5/8	5/16	0,3
MAC 8	13	8	5/16	1 9/64	5 15/64	3/4	1 3/64	15/32	25/32	25/64	0,6
MAC 10	21	13	3/8	1 3/8	6 1/2	59/64	1 17/64	19/32	31/32	15/32	1,0
MAC 12	30	18	1/2	1 21/32	7 3/4	1 7/64	1 33/64	45/64	1 9/64	19/32	1,9
MAC 14	41	25	9/16	1 13/16	8 15/16	1 15/64	1 11/16	25/32	1 3/8	19/32	3,0
MAC 16	54	32	5/8	2 1/8	10 5/16	1 29/64	1 31/32	15/16	1 37/64	45/64	4,3
MAC 18	68	41	11/16	2 7/16	11 39/64	1 21/32	2 1/4	1 1/16	1 3/4	55/64	6,7
MAC 20	85	51	13/16	2 41/64	12 7/8	1 53/64	2 15/32	1 3/16	2	55/64	8,1
MAC 22	103	62	7/8	2 53/64	14 1/64	1 15/16	2 5/8	1 17/64	2 1/8	63/64	10
MAC 24	123	74	15/16	3 1/32	15 9/32	2 7/64	2 27/32	1 3/8	2 3/8	63/64	14
MAC 26	144	86	1	3 15/64	16 37/64	2 1/4	3 3/64	1 29/64	2 5/8	63/64	16
MAC 28	167	100	1 1/8	3 1/2	17 3/4	2 27/64	3 17/64	1 37/64	2 23/32	1 3/16	22
MAC 30	192	115	1 3/16	3 47/64	19 1/16	2 19/32	3 33/64	1 21/32	2 61/64	1 3/16	28
MAC 32	218	131	1 1/4	3 15/16	20 5/16	2 3/4	3 45/64	1 13/16	3 3/16	1 17/64	31
MAC 34	246	148	1 5/16	4 21/64	21 11/16	3	4 5/64	1 59/64	3 23/64	1 3/8	42
MAC 36	277	166	1 7/16	4 17/32	22 29/32	3 9/64	4 17/64	2	3 17/32	1 29/64	45
MAC 38	308	185	1 1/2	4 49/64	24 1/16	3 9/32	4 15/32	2 3/32	3 41/64	1 37/64	55
MAC 40	342	205	1 9/16	4 61/64	25 23/64	3 7/16	4 43/64	2 13/64	3 15/16	1 37/64	61
MAC 42	377	226	1 5/8	5 13/64	26 39/64	3 19/32	4 29/32	2 9/32	4 3/32	1 21/32	73



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: $\gamma_R = 1.0$

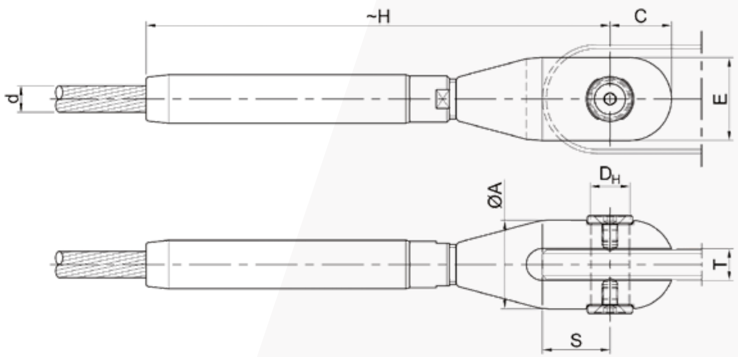
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

ADJUSTABLE OPEN SWAGED SOCKET
42CrMo4

MAC-R

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	DH (in)	S (in)	T (in)	Adj. (in)	Mass (lb)
MAC-R 6	8	5	1/4	29/32	4 3/8	39/64	13/16	25/64	5/8	5/16	1/8	0,3
MAC-R 8	13	8	5/16	1 9/64	5 45/64	3/4	1 3/64	15/32	25/32	25/64	5/32	0,6
MAC-R 10	21	13	3/8	1 3/8	7 3/32	59/64	1 17/64	19/32	31/32	15/32	13/64	1,1
MAC-R 12	30	18	1/2	1 21/32	8 15/32	1 7/64	1 33/64	45/64	1 9/64	19/32	15/64	2,0
MAC-R 14	41	25	9/16	1 13/16	9 49/64	1 15/64	1 11/16	25/32	1 3/8	19/32	9/32	3,5
MAC-R 16	54	32	5/8	2 1/8	11 17/64	1 29/64	1 31/32	15/16	1 37/64	45/64	5/16	4,7
MAC-R 18	68	41	11/16	2 7/16	12 43/64	1 21/32	2 1/4	1 1/16	1 3/4	55/64	23/64	7,4
MAC-R 20	85	51	13/16	2 41/64	14 1/16	1 53/64	2 15/32	1 3/16	2	55/64	25/64	9,0
MAC-R 22	103	62	7/8	2 53/64	15 5/16	1 15/16	2 5/8	1 17/64	2 1/8	63/64	7/16	11
MAC-R 24	123	74	15/16	3 1/32	16 11/16	2 7/64	2 27/32	1 3/8	2 3/8	63/64	15/32	16
MAC-R 26	144	86	1	3 15/64	18 7/64	2 1/4	3 3/64	1 29/64	2 5/8	63/64	33/64	18
MAC-R 28	167	100	1 1/8	3 1/2	19 13/32	2 27/64	3 17/64	1 37/64	2 23/32	1 3/16	35/64	24
MAC-R 30	192	115	1 3/16	3 47/64	20 53/64	2 19/32	3 33/64	1 21/32	2 61/64	1 3/16	19/32	31
MAC-R 32	218	131	1 1/4	3 15/16	22 13/64	2 3/4	3 45/64	1 13/16	3 3/16	1 17/64	5/8	34
MAC-R 34	246	148	1 5/16	4 21/64	23 45/64	3	4 5/64	1 59/64	3 23/64	1 3/8	43/64	45
MAC-R 36	277	166	1 7/16	4 17/32	25 3/64	3 9/64	4 17/64	2	3 17/32	1 29/64	45/64	49
MAC-R 38	308	185	1 1/2	4 49/64	26 19/64	3 9/32	4 15/32	2 3/32	3 41/64	1 37/64	3/4	60
MAC-R 40	342	205	1 9/16	4 61/64	27 23/32	3 7/16	4 43/64	2 13/64	3 15/16	1 37/64	25/32	66
MAC-R 42	377	226	1 5/8	5 13/64	29 3/32	3 19/32	4 29/32	2 9/32	4 3/32	1 21/32	53/64	80



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

Adj. Adjustment

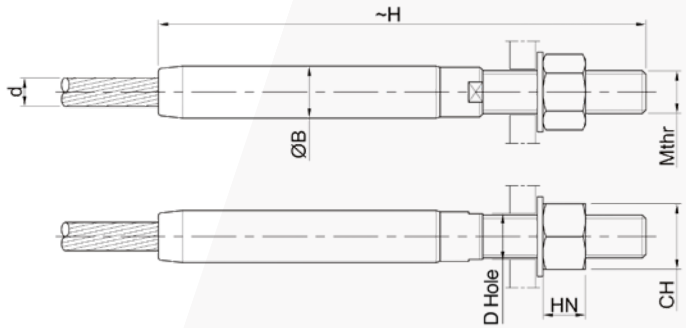
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØB (in)	~H (in)	Mthr (in)	Pitch (in)	Lthr (in)	D Hole (in)	CH (in)	HN (in)	Mass (lb)
FLT 6	8	5	1/4	15/32	3 31/32	5/16	3/64	1 27/64	23/64	33/64	5/16	0,2
FLT 8	13	8	5/16	39/64	5 25/64	15/32	1/16	1 31/32	33/64	45/64	15/32	0,4
FLT 10	21	13	3/8	23/32	6 17/32	35/64	5/64	2 9/32	19/32	53/64	35/64	0,6
FLT 12	30	18	1/2	59/64	7 3/4	5/8	5/64	2 41/64	45/64	15/16	5/8	1,1
FLT 14	41	25	9/16	1 3/16	9 3/32	25/32	3/32	3 5/32	55/64	1 3/16	25/32	2,1
FLT 16	54	32	5/8	1 3/16	10 15/32	15/16	1/8	3 21/32	1 1/32	1 27/64	15/16	2,7
FLT 18	68	41	11/16	1 29/64	11 47/64	1 1/16	1/8	4 3/32	1 3/16	1 39/64	1 1/16	4,3
FLT 20	85	51	13/16	1 29/64	12 63/64	1 3/16	9/64	4 31/64	1 19/64	1 13/16	1 3/16	5,1
FLT 22	103	62	7/8	1 37/64	14 13/32	1 19/64	9/64	5 5/64	1 27/64	1 31/32	1 19/64	6,7
FLT 24	123	74	15/16	1 27/32	15 45/64	1 27/64	1/8	5 33/64	1 17/32	2 11/64	1 27/64	9,7
FLT 26	144	86	1	1 27/32	16 31/32	1 17/32	1/8	5 15/16	1 21/32	2 23/64	1 17/32	11
FLT 28	167	100	1 1/8	2 7/64	18 15/64	1 21/32	1/8	6 11/32	1 49/64	2 9/16	1 21/32	15
FLT 30	192	115	1 3/16	2 3/8	19 31/64	1 49/64	1/8	6 49/64	1 57/64	2 3/4	1 49/64	20
FLT 32	218	131	1 1/4	2 3/8	20 45/64	1 57/64	1/8	7 1/8	2	2 61/64	1 57/64	22
FLT 34	246	148	1 5/16	2 5/8	22 3/32	2 3/64	1/8	7 41/64	2 11/64	3 5/32	2 3/64	28
FLT 36	277	166	1 7/16	2 5/8	23 7/64	2 3/64	1/8	7 53/64	2 11/64	3 5/32	2 3/64	29
FLT 38	308	185	1 1/2	2 57/64	24 29/64	2 13/64	5/32	8 5/16	2 21/64	3 11/32	2 13/64	37
FLT 40	342	205	1 9/16	2 57/64	25 3/4	2 23/64	5/32	8 25/32	2 31/64	3 35/64	2 23/64	40
FLT 42	377	226	1 5/8	3 5/32	27 3/32	2 33/64	5/32	9 1/4	2 41/64	3 47/64	2 33/64	50



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: $\gamma_R = 1.0$

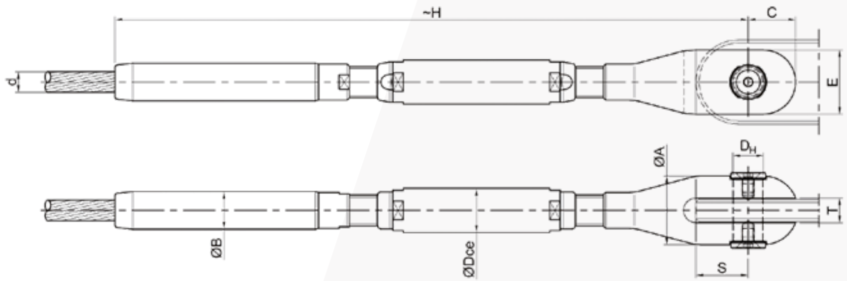
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

TURNBUCKLE
42CrMo4

TBC

PRODUCT CODE	N_{uk} [1] (kip)	N_{Rd} [2] (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	D_H (in)	Dce (in)	B (in)	S (in)	T (in)	Adj. (in)	Mass (lb)
TBC 6	8	5	1/4	29/32	7 61/64	39/64	13/16	25/64	33/64	1/2	5/8	5/16	25/32	0,4
TBC 8	13	8	5/16	1 9/64	10 33/64	3/4	1 3/64	15/32	45/64	41/64	25/32	25/64	63/64	1,0
TBC 10	21	13	3/8	1 3/8	12 23/32	59/64	1 17/64	19/32	53/64	49/64	31/32	15/32	1 3/16	1,7
TBC 12	30	18	1/2	1 21/32	15	1 7/64	1 33/64	45/64	15/16	63/64	1 9/64	19/32	1 3/8	2,9
TBC 14	41	25	9/16	1 13/16	17 7/16	1 15/64	1 11/16	25/32	1 9/64	1 17/64	1 3/8	19/32	1 37/64	5,1
TBC 16	54	32	5/8	2 1/8	20 5/64	1 29/64	1 31/32	15/16	1 11/32	1 17/64	1 37/64	45/64	1 49/64	7,2
TBC 18	68	41	11/16	2 7/16	22 9/16	1 21/32	2 1/4	1 1/16	1 29/64	1 17/32	1 3/4	55/64	1 31/32	11
TBC 20	85	51	13/16	2 41/64	24 59/64	1 53/64	2 15/32	1 3/16	1 11/16	1 17/32	2	55/64	2 11/64	14
TBC 22	103	62	7/8	2 53/64	27 3/4	1 15/16	2 5/8	1 17/64	1 13/16	1 11/16	2 1/8	63/64	2 9/16	18
TBC 24	123	74	15/16	3 1/32	30 13/64	2 7/64	2 27/32	1 3/8	1 59/64	1 31/32	2 3/8	63/64	2 3/4	24
TBC 26	144	86	1	3 15/64	32 43/64	2 1/4	3 3/64	1 29/64	2 3/32	1 31/32	2 5/8	63/64	2 61/64	28
TBC 28	167	100	1 1/8	3 1/2	34 61/64	2 27/64	3 17/64	1 37/64	2 1/4	2 1/4	2 23/32	1 3/16	3 5/32	36
TBC 30	192	115	1 3/16	3 47/64	37 7/16	2 19/32	3 33/64	1 21/32	2 23/64	2 33/64	2 61/64	1 3/16	3 11/32	46
TBC 32	218	131	1 1/4	3 15/16	39 23/32	2 3/4	3 45/64	1 13/16	2 33/64	2 33/64	3 3/16	1 17/64	3 35/64	53
TBC 34	246	148	1 5/16	4 21/64	42 7/16	3	4 5/64	1 59/64	2 23/32	2 51/64	3 23/64	1 3/8	3 47/64	68
TBC 36	277	166	1 7/16	4 17/32	44 3/8	3 9/64	4 17/64	2	2 3/4	2 51/64	3 17/32	1 29/64	3 15/16	73
TBC 38	308	185	1 1/2	4 49/64	46 49/64	3 9/32	4 15/32	2 3/32	2 29/32	3 5/64	3 41/64	1 37/64	4 9/64	89
TBC 40	342	205	1 9/16	4 61/64	49 21/64	3 7/16	4 43/64	2 13/64	3 7/64	3 5/64	3 15/16	1 37/64	4 21/64	101
TBC 42	377	226	1 5/8	5 13/64	51 27/32	3 19/32	4 29/32	2 9/32	3 5/16	3 11/32	4 3/32	1 21/32	4 17/32	122



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

Adj. Adjustment

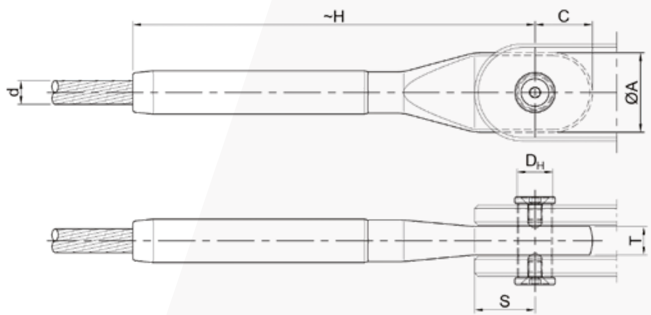
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

CLOSED SWAGED SOCKET
42CrMo4

MCC

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	D_H (in)	S (in)	T (in)	Mass (lb)
MCC 6	8	5	1/4	29/32	4 1/64	21/32	25/64	5/8	5/16	0,3
MCC 8	13	8	5/16	1 9/64	5 15/64	13/16	15/32	25/32	25/64	0,6
MCC 10	21	13	3/8	1 3/8	6 1/2	63/64	19/32	31/32	15/32	1,0
MCC 12	30	18	1/2	1 21/32	7 3/4	1 3/16	45/64	1 9/64	35/64	1,9
MCC 14	41	25	9/16	1 13/16	8 15/16	1 19/64	25/32	1 3/8	5/8	3,0
MCC 16	54	32	5/8	2 1/8	10 5/16	1 17/32	15/16	1 37/64	3/4	4,0
MCC 18	68	41	11/16	2 7/16	11 39/64	1 3/4	1 1/16	1 3/4	25/32	6,5
MCC 20	85	51	13/16	2 41/64	12 7/8	1 29/32	1 3/16	2	55/64	7,4
MCC 22	103	62	7/8	2 53/64	14 1/64	2 3/64	1 17/64	2 1/8	1 1/32	9,5
MCC 24	123	74	15/16	3 1/32	15 9/32	2 13/64	1 3/8	2 3/8	1 7/32	13
MCC 26	144	86	1	3 15/64	16 37/64	2 11/32	1 29/64	2 5/8	1 7/32	14
MCC 28	167	100	1 1/8	3 1/2	17 3/4	2 35/64	1 37/64	2 23/32	1 11/32	20
MCC 30	192	115	1 3/16	3 47/64	19 1/16	2 45/64	1 21/32	2 61/64	1 27/64	25
MCC 32	218	131	1 1/4	3 15/16	20 5/16	2 7/8	1 13/16	3 3/16	1 21/32	28
MCC 34	246	148	1 5/16	4 21/64	21 11/16	3 1/8	1 59/64	3 23/64	1 47/64	37
MCC 36	277	166	1 7/16	4 17/32	22 29/32	3 17/64	2	3 17/32	1 57/64	40
MCC 38	308	185	1 1/2	4 49/64	24 1/16	3 27/64	2 3/32	3 41/64	2 3/64	50
MCC 40	342	205	1 9/16	4 61/64	25 23/64	3 37/64	2 13/64	3 15/16	2 13/64	53
MCC 42	377	226	1 5/8	5 13/64	26 39/64	3 47/64	2 9/32	4 3/32	2 23/64	65



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: $\gamma_R = 1.0$

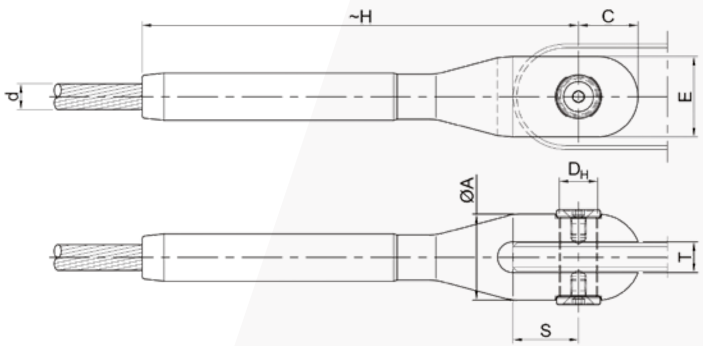
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

HIGH STRENGTH STEEL

OPEN SWAGED SOCKET
S355J2

MAC

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	DH (in)	S (in)	T (in)	Mass (lb)
MAC 6	8	5	1/4	63/64	4 3/32	41/64	29/32	25/64	5/8	5/16	0,4
MAC 8	13	8	5/16	1 17/64	5 23/64	27/32	1 11/64	33/64	13/16	25/64	0,8
MAC 10	21	13	3/8	1 1/2	6 37/64	63/64	1 25/64	19/32	31/32	15/32	1,6
MAC 12	30	18	1/2	1 27/32	7 61/64	1 15/64	1 23/32	3/4	1 13/64	19/32	3,1
MAC 14	41	25	9/16	2	9 11/64	1 23/64	1 57/64	53/64	1 25/64	19/32	3,8
MAC 16	54	32	5/8	2 23/64	10 35/64	1 39/64	2 15/64	63/64	1 41/64	45/64	6,4
MAC 18	68	41	11/16	2 23/32	11 27/32	1 53/64	2 35/64	1 7/64	1 49/64	55/64	8,1
MAC 20	85	51	13/16	2 29/32	13 5/32	1 31/32	2 3/4	1 3/16	2	55/64	11
MAC 22	103	62	7/8	3 3/16	14 13/32	2 5/32	3	1 19/64	2 3/16	63/64	15
MAC 24	123	74	15/16	3 27/64	15 45/64	2 11/32	3 1/4	1 27/64	2 7/16	63/64	20
MAC 26	144	86	1	3 5/8	16 31/32	2 31/64	3 15/32	1 1/2	2 43/64	63/64	23
MAC 28	167	100	1 1/8	4 1/16	18 5/16	2 47/64	3 55/64	1 39/64	2 25/32	1 3/16	31
MAC 30	192	115	1 3/16	4 19/64	19 11/16	2 15/16	4 7/64	1 49/64	3 3/32	1 3/16	40
MAC 32	218	131	1 1/4	4 9/16	20 15/16	3 1/8	4 23/64	1 57/64	3 17/64	1 17/64	45
MAC 34	246	148	1 5/16	4 7/8	22 9/32	3 21/64	4 21/32	2	3 7/16	1 3/8	57
MAC 36	277	166	1 7/16	5 13/64	23 5/8	3 35/64	4 31/32	2 1/8	3 21/32	1 29/64	71
MAC 38	308	185	1 1/2	5 15/32	24 27/32	3 45/64	5 7/32	2 13/64	3 25/32	1 37/64	77
MAC 40	342	205	1 9/16	5 43/64	26 3/16	3 7/8	5 27/64	2 21/64	4 5/64	1 37/64	92
MAC 42	377	226	1 5/8	6 1/16	27 43/64	4 11/64	5 13/16	2 33/64	4 3/8	1 21/32	105



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

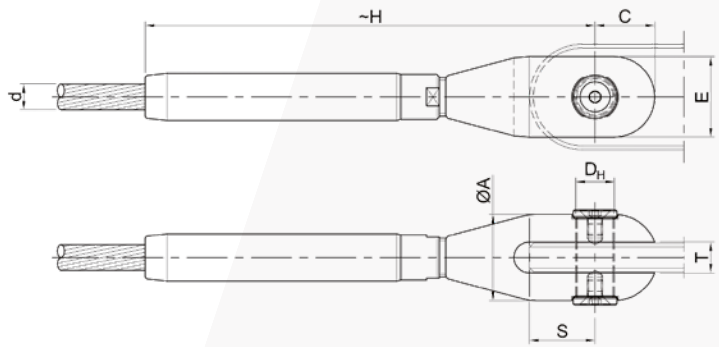
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	DH (in)	S (in)	T (in)	Adj. (in)	Mass (lb)
MAC-R 6	8	5	1/4	63/64	4 29/64	41/64	29/32	25/64	5/8	5/16	1/8	0,5
MAC-R 8	13	8	5/16	1 17/64	5 53/64	27/32	1 11/64	33/64	13/16	25/64	5/32	1,0
MAC-R 10	21	13	3/8	1 1/2	7 11/64	63/64	1 25/64	19/32	31/32	15/32	13/64	1,8
MAC-R 12	30	18	1/2	1 27/32	8 21/32	1 15/64	1 23/32	3/4	1 13/64	19/32	15/64	3,5
MAC-R 14	41	25	9/16	2	10	1 23/64	1 57/64	53/64	1 25/64	19/32	9/32	4,3
MAC-R 16	54	32	5/8	2 23/64	11 1/2	1 39/64	2 15/64	63/64	1 41/64	45/64	5/16	7,2
MAC-R 18	68	41	11/16	2 23/32	12 29/32	1 53/64	2 35/64	1 7/64	1 49/64	55/64	23/64	9
MAC-R 20	85	51	13/16	2 29/32	14 21/64	1 31/32	2 3/4	1 3/16	2	55/64	25/64	12
MAC-R 22	103	62	7/8	3 3/16	15 45/64	2 5/32	3	1 19/64	2 3/16	63/64	7/16	16
MAC-R 24	123	74	15/16	3 27/64	17 1/8	2 11/32	3 1/4	1 27/64	2 7/16	63/64	15/32	22
MAC-R 26	144	86	1	3 5/8	18 1/2	2 31/64	3 15/32	1 1/2	2 43/64	63/64	33/64	25
MAC-R 28	167	100	1 1/8	4 1/16	19 61/64	2 47/64	3 55/64	1 39/64	2 25/32	1 3/16	35/64	34
MAC-R 30	192	115	1 3/16	4 19/64	21 29/64	2 15/16	4 7/64	1 49/64	3 3/32	1 3/16	19/32	44
MAC-R 32	218	131	1 1/4	4 9/16	22 53/64	3 1/8	4 23/64	1 57/64	3 17/64	1 17/64	5/8	50
MAC-R 34	246	148	1 5/16	4 7/8	24 19/64	3 21/64	4 21/32	2	3 7/16	1 3/8	43/64	62
MAC-R 36	277	166	1 7/16	5 13/64	25 3/4	3 35/64	4 31/32	2 1/8	3 21/32	1 29/64	45/64	76
MAC-R 38	308	185	1 1/2	5 15/32	27 3/32	3 45/64	5 7/32	2 13/64	3 25/32	1 37/64	3/4	84
MAC-R 40	342	205	1 9/16	5 43/64	28 35/64	3 7/8	5 27/64	2 21/64	4 5/64	1 37/64	25/32	99
MAC-R 42	377	226	1 5/8	6 1/16	30 5/32	4 11/64	5 13/16	2 33/64	4 3/8	1 21/32	53/64	113



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

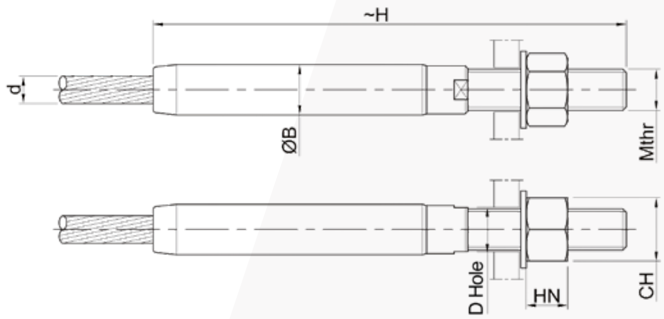
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

SWAGED FITTING
S355J2

FLT

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØB (in)	~H (in)	Mthr (in)	Pitch (in)	Lthr (in)	D Hole (in)	CH (in)	HN (in)	Mass (lb)
FLT 6	8	5	1/4	15/32	4 21/64	15/32	1/16	1 49/64	33/64	45/64	15/32	0,3
FLT 8	13	8	5/16	39/64	5 43/64	5/8	5/64	2 1/4	45/64	15/16	5/8	0,6
FLT 10	21	13	3/8	23/32	7	25/32	3/32	2 3/4	55/64	1 3/16	25/32	1,3
FLT 12	30	18	1/2	59/64	8 25/64	15/16	1/8	3 17/64	1 1/32	1 27/64	15/16	2,4
FLT 14	41	25	9/16	1 3/16	9 41/64	1 1/16	1/8	3 45/64	1 3/16	1 39/64	1 1/16	2,9
FLT 16	54	32	5/8	1 3/16	10 29/32	1 3/16	9/64	4 3/32	1 19/64	1 13/16	1 3/16	4,7
FLT 18	68	41	11/16	1 29/64	12 1/8	1 19/64	9/64	4 31/64	1 27/64	1 31/32	1 19/64	5,4
FLT 20	85	51	13/16	1 29/64	13 27/64	1 27/64	1/8	4 59/64	1 17/32	2 11/64	1 27/64	7,2
FLT 22	103	62	7/8	1 37/64	14 7/8	1 17/32	1/8	5 35/64	1 21/32	2 23/64	1 17/32	10
FLT 24	123	74	15/16	1 27/32	16 9/64	1 21/32	1/8	5 15/16	1 49/64	2 9/16	1 21/32	14
FLT 26	144	86	1	1 27/32	17 13/32	1 49/64	1/8	6 3/8	1 57/64	2 3/4	1 49/64	16
FLT 28	167	100	1 1/8	2 7/64	18 15/16	2 3/64	1/8	7 3/64	2 11/64	3 5/32	2 3/64	23
FLT 30	192	115	1 3/16	2 3/8	20 15/64	2 13/64	5/32	7 33/64	2 21/64	3 11/32	2 13/64	29
FLT 32	218	131	1 1/4	2 3/8	21 37/64	2 23/64	5/32	7 63/64	2 31/64	3 35/64	2 23/64	32
FLT 34	246	148	1 5/16	2 5/8	22 29/32	2 33/64	5/32	8 15/32	2 41/64	3 47/64	2 33/64	41
FLT 36	277	166	1 7/16	2 5/8	23 15/16	2 33/64	5/32	8 21/32	2 41/64	3 47/64	2 33/64	47
FLT 38	308	185	1 1/2	2 57/64	25 9/32	2 43/64	5/32	9 9/64	2 51/64	3 15/16	2 43/64	51
FLT 40	342	205	1 9/16	2 57/64	26 39/64	2 53/64	5/32	9 41/64	2 61/64	4 9/64	2 53/64	61
FLT 42	377	226	1 5/8	3 5/32	27 61/64	2 63/64	5/32	10 1/8	3 7/64	4 21/64	2 63/64	66



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

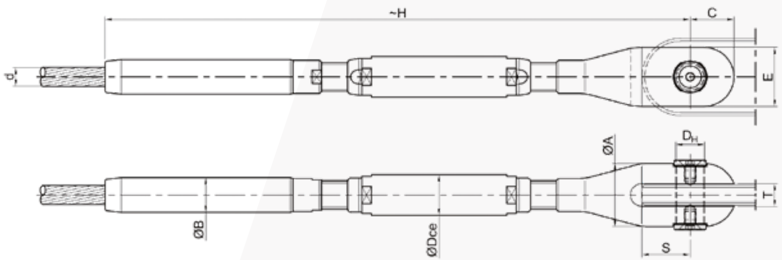
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

TURNBUCKLE
S355J2

TBC

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	D_H (in)	Dce (in)	B (in)	S (in)	T (in)	Adj. (in)	Mass (lb)
TBC 6	8	5	1/4	63/64	8 21/32	41/64	29/32	25/64	3/4	15/32	5/8	5/16	25/32	0,8
TBC 8	13	8	5/16	1 17/64	11 3/16	27/32	1 11/64	33/64	15/16	39/64	13/16	25/64	63/64	1,7
TBC 10	21	13	3/8	1 1/2	13 21/32	63/64	1 25/64	19/32	1 9/64	23/32	31/32	15/32	1 3/16	3,2
TBC 12	30	18	1/2	1 27/32	16 19/64	1 15/64	1 23/32	3/4	1 3/8	59/64	1 13/64	19/32	1 3/8	5,9
TBC 14	41	25	9/16	2	18 45/64	1 23/64	1 57/64	53/64	1 17/32	1 3/16	1 25/64	19/32	1 37/64	7,7
TBC 16	54	32	5/8	2 23/64	21 3/16	1 39/64	2 15/64	63/64	1 49/64	1 3/16	1 41/64	45/64	1 49/64	12
TBC 18	68	41	11/16	2 23/32	23 37/64	1 53/64	2 35/64	1 7/64	1 31/32	1 29/64	1 49/64	55/64	1 31/32	16
TBC 20	85	51	13/16	2 29/32	26 1/16	1 31/32	2 3/4	1 3/16	2 1/8	1 29/64	2	55/64	2 11/64	21
TBC 22	103	62	7/8	3 3/16	29 3/32	2 5/32	3	1 19/64	2 21/64	1 37/64	2 3/16	63/64	2 9/16	28
TBC 24	123	74	15/16	3 27/64	31 1/2	2 11/32	3 1/4	1 27/64	2 33/64	1 27/32	2 7/16	63/64	2 3/4	37
TBC 26	144	86	1	3 5/8	33 15/16	2 31/64	3 15/32	1 1/2	2 23/32	1 27/32	2 43/64	63/64	2 61/64	44
TBC 28	167	100	1 1/8	4 1/16	36 59/64	2 47/64	3 55/64	1 39/64	3 5/64	2 7/64	2 25/32	1 3/16	3 5/32	62
TBC 30	192	115	1 3/16	4 19/64	39 9/16	2 15/16	4 7/64	1 49/64	3 5/16	2 3/8	3 3/32	1 3/16	3 11/32	78
TBC 32	218	131	1 1/4	4 9/16	42 3/32	3 1/8	4 23/64	1 57/64	3 35/64	2 3/8	3 17/64	1 17/64	3 35/64	91
TBC 34	246	148	1 5/16	4 7/8	44 11/16	3 21/64	4 21/32	2	3 25/32	2 5/8	3 7/16	1 3/8	3 47/64	112
TBC 36	277	166	1 7/16	5 13/64	46 47/64	3 35/64	4 31/32	2 1/8	3 55/64	2 5/8	3 21/32	1 29/64	3 15/16	130
TBC 38	308	185	1 1/2	5 15/32	49 7/32	3 45/64	5 7/32	2 13/64	4 3/32	2 57/64	3 25/32	1 37/64	4 9/64	147
TBC 40	342	205	1 9/16	5 43/64	51 57/64	3 7/8	5 27/64	2 21/64	4 21/64	2 57/64	4 5/64	1 37/64	4 21/64	174
TBC 42	377	226	1 5/8	6 1/16	54 41/64	4 11/64	5 13/16	2 33/64	4 9/16	3 5/32	4 3/8	1 21/32	4 17/32	200



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

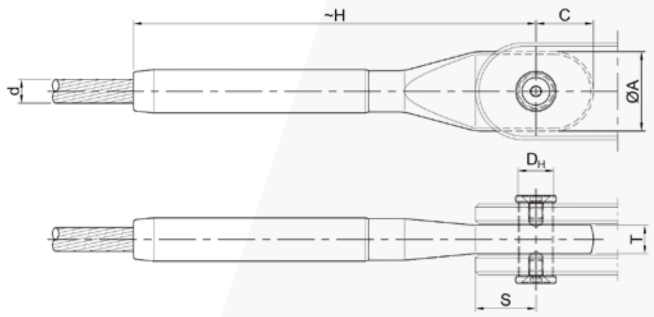
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	D_H (in)	S (in)	T (in)	Mass (lb)
MCC 6	8	5	1/4	63/64	4 3/32	11/16	25/64	5/8	15/32	0,4
MCC 8	13	8	5/16	1 17/64	5 23/64	57/64	33/64	13/16	35/64	0,8
MCC 10	21	13	3/8	1 1/2	6 37/64	1 3/64	19/32	31/32	43/64	1,5
MCC 12	30	18	1/2	1 27/32	7 61/64	1 19/64	3/4	1 13/64	53/64	2,8
MCC 14	41	25	9/16	2	9 11/64	1 27/64	53/64	1 25/64	15/16	3,3
MCC 16	54	32	5/8	2 23/64	10 35/64	1 43/64	63/64	1 41/64	1 19/64	5,7
MCC 18	68	41	11/16	2 23/32	11 27/32	1 29/32	1 7/64	1 49/64	1 27/64	7,2
MCC 20	85	51	13/16	2 29/32	13 5/32	2 3/64	1 3/16	2	1 1/2	9,0
MCC 22	103	62	7/8	3 3/16	14 13/32	2 1/4	1 19/64	2 3/16	1 21/32	13
MCC 24	123	74	15/16	3 27/64	15 45/64	2 27/64	1 27/64	2 7/16	1 59/64	17
MCC 26	144	86	1	3 5/8	16 31/32	2 9/16	1 1/2	2 43/64	2 3/32	19
MCC 28	167	100	1 1/8	4 1/16	18 5/16	2 53/64	1 39/64	2 25/32	2 1/4	26
MCC 30	192	115	1 3/16	4 19/64	19 11/16	3 1/32	1 49/64	3 3/32	2 7/16	33
MCC 32	218	131	1 1/4	4 9/16	20 15/16	3 15/64	1 57/64	3 17/64	2 43/64	37
MCC 34	246	148	1 5/16	4 7/8	22 9/32	3 7/16	2	3 7/16	2 7/8	47
MCC 36	277	166	1 7/16	5 13/64	23 5/8	3 21/32	2 1/8	3 21/32	3 7/64	58
MCC 38	308	185	1 1/2	5 15/32	24 27/32	3 27/32	2 13/64	3 25/32	3 15/64	64
MCC 40	342	205	1 9/16	5 43/64	26 3/16	4	2 21/64	4 5/64	3 35/64	75
MCC 42	377	226	1 5/8	6 1/16	27 43/64	4 19/64	2 33/64	4 3/8	3 13/16	83



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.

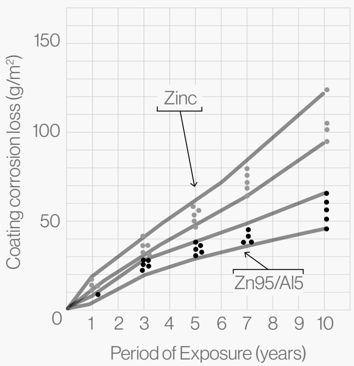
DIAMETER OF ROUND WIRES	MINIMUM AREA MASS OF COATING
0,4-7 mm	85-300 g/m²

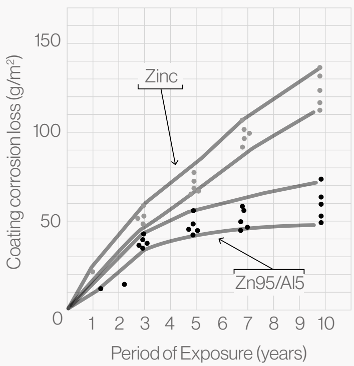
HEIGHT OF Z-WIRES	MINIMUM AREA MASS OF COATING
2-8 mm	215-300 g/m²

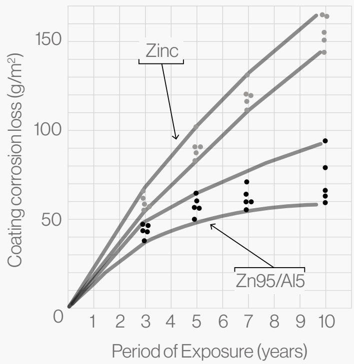
The hot dip galvanising process ensures a zinc layer is firmly alloyed and chemically bonded with the underlying steel wire. The zinc coating isolates the wires from the external corrosive agents and acts as sacrificial material when in contact with air. The adherence of zinc coating on wires is tested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

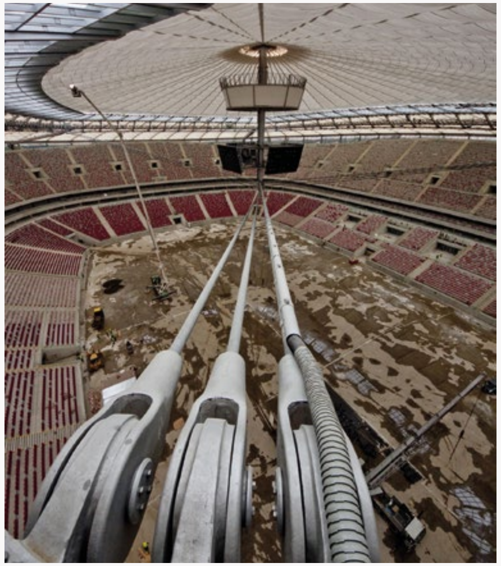
Tensocoat Wax has the following properties:

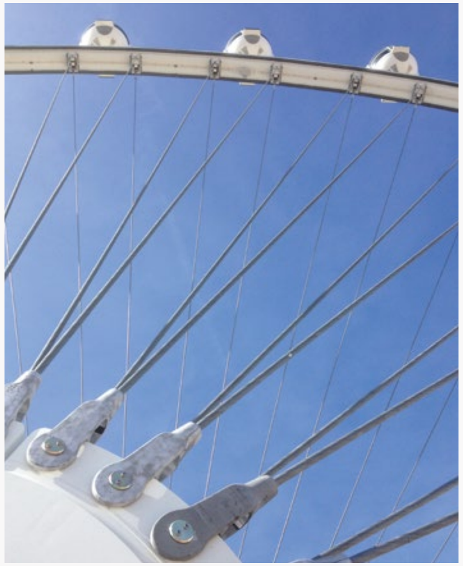
- Specific mass: 1.0 kg/dm³
- Dry mass: 56%
- Resin (on dry mass): 25 %

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

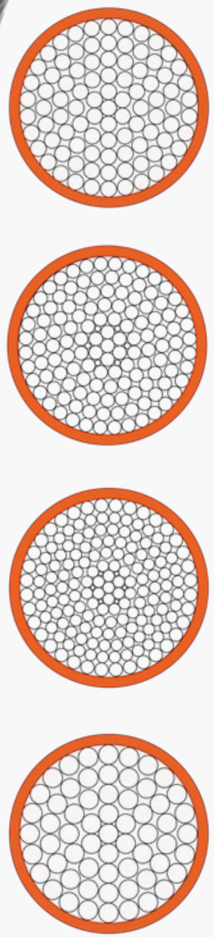
TECHNICAL PRODUCT DATA

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.

OSSH

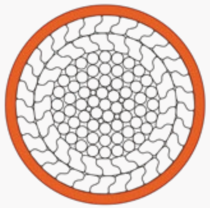


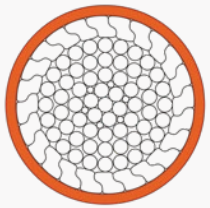
PRODUCT CODE	d[1] (in)	d[2] (in)	F_{uk} (1) (kip)	F_{Rd} (2) (kip)	A (in²)	EA (kip)	Mass (lp/ft)
OSSH 8	5/16	9/16	13	9	0,1	1455	0,3
OSSH 12	1/2	3/4	30	20	0,1	3273	0,6
OSSH 16	5/8	7/8	54	36	0,2	5820	1,0
OSSH 20	13/16	1 1/16	85	57	0,4	9093	1,5
OSSH 24	15/16	1 1/4	123	82	0,5	13094	2,2
OSSH 28	1 1/8	1 3/8	167	112	0,7	17822	2,9
OSSH 32	1 1/4	1 9/16	218	145	1,0	23278	3,8
OSSH 36	1 7/16	1 3/4	277	184	1,2	29461	4,7
OSSH 40	1 9/16	1 7/8	342	228	1,5	36372	5,8
OSSH 44	1 3/4	2	414	276	1,8	44010	7,0
OSSH 48	1 7/8	2 3/16	492	328	2,2	52376	8,3
OSSH 52	2	2 3/8	578	385	2,6	61469	9,6
OSSH 56	2 3/16	2 1/2	670	447	3,0	71289	11,1
OSSH 60	2 3/8	2 3/4	770	513	3,4	81837	12,9
OSSH 64	2 1/2	2 15/16	870	580	3,9	91984	14,6
OSSH 68	2 11/16	3 1/16	979	653	4,4	103841	16,5
OSSH 72	2 13/16	3 1/4	1095	730	4,9	116417	18,4
OSSH 76	3	3 3/8	1216	811	5,5	129712	20,5
OSSH 80	3 1/8	3 9/16	1344	896	6,1	143725	22,6
OSSH 84	3 5/16	3 11/16	1479	986	6,7	158457	24,9
OSSH 88	3 7/16	3 7/8	1621	1081	7,4	173907	27,3
OSSH 92	3 5/8	4 1/8	1769	1179	8,0	190076	30,0
OSSH 96	3 3/4	4 1/4	1924	1283	8,8	206964	32,6
OSSH 100	3 15/16	4 7/16	2085	1390	9,5	224570	35,3
OSSH 104	4 1/8	4 9/16	2254	1502	10,3	242895	38,1
OSSH 108	4 1/4	4 3/4	2428	1619	11,1	261939	41,0
OSSH 112	4 7/16	4 7/8	2609	1739	11,9	281701	44,1
OSSH 116	4 9/16	5	2797	1864	12,8	302182	47,2
OSSH 120	4 3/4	5 3/16	2991	1994	13,7	323381	50,5

- 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 (in)	d^2 (in)	F_{uk} (1) (kip)	F_{Rd} (2) (kip)	A (in²)	EA (kip)	Mass (lp/ft)
FLCH 16	5/8	7/8	57	38	0,3	6315	1,1
FLCH 20	13/16	1 1/16	89	59	0,4	9867	1,7
FLCH 24	15/16	1 1/4	129	86	0,6	14208	2,3
FLCH 28	1 1/8	1 3/8	175	117	0,8	19339	3,1
FLCH 32	1 1/4	1 9/16	229	153	1,1	25259	4,1
FLCH 36	1 7/16	1 3/4	291	194	1,3	31968	5,1
FLCH 40	1 9/16	1 7/8	363	242	1,7	39942	6,4
FLCH 44	1 3/4	2	440	293	2,0	48330	7,7
FLCH 48	1 7/8	2 3/16	524	349	2,4	57516	9,1
FLCH 52	2	2 3/8	622	414	2,9	68306	10,8
FLCH 56	2 3/16	2 1/2	721	480	3,3	79218	12,4
FLCH 60	2 3/8	2 3/4	827	552	3,8	90939	14,4
FLCH 64	2 1/2	2 15/16	942	628	4,3	103469	16,3
FLCH 68	2 11/16	3 1/16	1063	709	4,9	115391	18,4
FLCH 72	2 13/16	3 1/4	1177	785	5,5	129365	20,5
FLCH 76	3	3 3/8	1307	872	6,1	144138	22,8
FLCH 80	3 1/8	3 9/16	1444	963	6,8	159710	25,2
FLCH 84	3 5/16	3 11/16	1589	1060	7,4	176081	27,8
FLCH 88	3 7/16	3 7/8	1741	1161	8,2	193249	30,4
FLCH 92	3 5/8	4 1/8	1900	1266	8,9	211217	33,4
FLCH 96	3 3/4	4 1/4	2065	1377	9,7	229983	36,4
FLCH 100	3 15/16	4 7/16	2265	1510	10,7	252483	39,8
FLCH 104	4 1/8	4 9/16	2446	1631	11,6	273086	43,0
FLCH 108	4 1/4	4 3/4	2636	1757	12,5	294496	46,4
FLCH 112	4 7/16	4 7/8	2865	1910	13,6	320397	50,4
FLCH 116	4 9/16	5	3071	2047	14,5	343692	54,0
FLCH 120	4 3/4	5 3/16	3283	2189	15,6	367803	57,7
FLCH 124	4 7/8	5 3/8	3504	2336	16,6	392732	61,5
FLCH 128	5	5 1/2	3775	2516	17,9	423288	66,3
FLCH 132	5 3/16	5 3/4	4012	2674	19,0	441872	70,7
FLCH 136	5 3/8	5 7/8	4257	2838	20,2	469058	75,0
FLCH 140	5 1/2	6 1/16	4509	3006	21,4	497056	79,4
FLCH 144	5 11/16	6 1/4	4767	3178	22,7	525864	83,9
FLCH 148	5 13/16	6 3/8	5035	3356	23,9	555485	88,6
FLCH 152	6	6 9/16	5308	3538	25,2	585917	93,4
FLCH 156	6 1/8	6 11/16	5589	3726	26,6	617160	98,3

d^1 Nominal Diameter

d^2 Nominal Diameter with HDPE

F_{uk} Characteristic Breaking Strength

F_{Rd} Design Resistance

A Metallic Cross Section

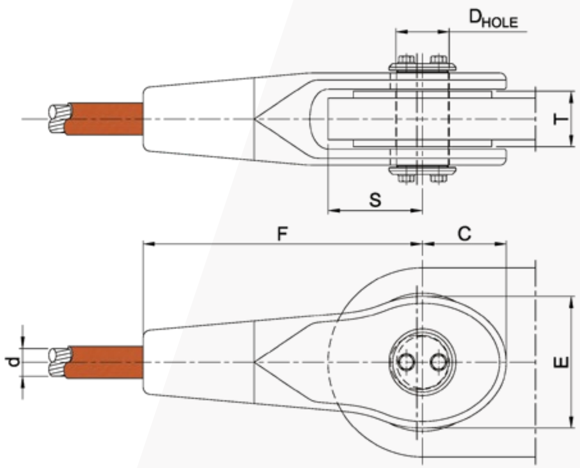
EA Elastic Stiffness

(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.



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	C (in)	D_{HOLE} (in)	E (in)	F (in)	S_{max} (in)	T_{min} (in)	T_{max} (in)	Mass (lb)
TTFH 12	1/2	43	29	1 1/2	1	2 23/64	5 15/32	1 31/32	5/8	55/64	3
TTFH 16	5/8	72	48	1 57/64	1 17/64	3 5/64	6 31/32	2 23/64	15/16	1 3/16	6
TTFH 20	13/16	110	74	2 23/64	1 17/32	3 45/64	8 1/2	2 61/64	1 3/16	1 29/64	10
TTFH 24	15/16	157	105	2 53/64	1 13/16	4 13/32	10 5/32	3 11/32	1 1/2	1 49/64	16
TTFH 28	1 1/8	218	145	3 5/16	2 1/8	5 13/64	11 37/64	3 15/16	1 31/32	2 13/64	26
TTFH 32	1 1/4	289	193	3 47/64	2 13/32	5 29/32	13 5/32	4 21/64	2 11/64	2 23/64	40
TTFH 36	1 7/16	363	242	4 3/32	2 41/64	6 29/64	14 3/8	4 23/32	2 9/16	2 3/4	54
TTFH 40	1 9/16	440	293	4 23/32	2 63/64	7 13/32	16 3/16	5 5/16	2 3/4	2 61/64	76
TTFH 44	1 3/4	528	352	5 1/8	3 17/64	8 5/64	17 19/32	5 45/64	3 5/32	3 11/32	101
TTFH 48	1 7/8	622	414	5 33/64	3 35/64	8 21/32	19 1/16	6 7/64	3 35/64	3 47/64	132
TTFH 52	2	742	495	6 1/16	3 55/64	9 17/32	20 15/32	6 11/16	3 47/64	4 9/64	162
TTFH 56	2 3/16	877	585	6 49/64	4 19/64	10 5/8	22 13/64	7 9/32	4 9/64	4 21/64	204
TTFH 60	2 3/8	989	659	7 11/64	4 9/16	11 17/64	23 55/64	8 5/64	4 17/32	4 23/32	245
TTFH 64	2 1/2	1124	749	7 23/32	4 7/8	12 1/8	25 9/32	8 15/32	4 59/64	5 1/8	297
TTFH 68	2 11/16	1248	832	8 3/16	5 5/32	12 51/64	27 1/8	9 1/16	5 1/8	5 5/16	350
TTFH 72	2 13/16	1405	937	8 37/64	5 7/16	13 37/64	28 35/64	9 29/64	5 33/64	5 45/64	413
TTFH 76	3	1574	1049	9 9/64	5 3/4	14 3/8	29 59/64	10 3/64	5 29/32	6 7/64	491
TTFH 80	3 1/8	1731	1154	9 41/64	6 1/16	15 13/64	31 11/16	10 5/8	6 7/64	6 1/2	577
TTFH 84	3 5/16	1911	1274	10 5/64	6 11/32	15 29/32	32 29/32	11 1/32	6 1/2	6 11/16	660
TTFH 88	3 7/16	2113	1409	11 7/64	7 3/64	17 13/32	34 23/32	11 13/16	6 57/64	7 3/32	793
TTFH 92	3 5/8	2293	1529	11 17/32	7 23/64	18 3/16	36 29/64	12 13/32	7 9/32	7 31/64	910
TTFH 96	3 3/4	2495	1664	12	7 41/64	18 31/32	37 43/64	12 51/64	7 31/64	7 7/8	1018
TTFH 100	3 15/16	2698	1798	12 19/32	7 61/64	19 49/64	39 9/16	13 37/64	7 43/64	8 5/64	1157
TTFH 104	4 1/8	2923	1948	13 5/64	8 17/64	20 35/64	40 25/32	13 31/32	8 5/64	8 15/32	1282
TTFH 108	4 1/4	3147	2098	13 37/64	8 37/64	21 27/64	42 33/64	14 9/16	8 17/64	8 55/64	1433
TTFH 112	4 7/16	3417	2278	14 1/4	8 15/16	22 7/16	44 7/32	15 5/32	8 15/32	9 1/16	1604
TTFH 116	4 9/16	3631	2421	14 49/64	9 19/64	23 5/16	45 5/8	15 3/4	8 55/64	9 29/64	1783
TTFH 120	4 3/4	3912	2608	15 9/32	9 9/16	24 3/32	47 1/4	16 9/64	9 1/16	9 27/32	1979
TTFH 124	4 7/8	4148	2765	15 3/4	9 59/64	24 7/8	48 55/64	16 59/64	9 29/64	10 3/64	2170
TTFH 128	5	4451	2967	16 7/32	10 13/64	25 19/32	50 9/32	17 21/64	9 27/32	10 7/16	2390
TTFH 132	5 3/16	4699	3132	16 47/64	10 33/64	26 29/64	51 1/2	17 23/32	10 3/64	10 5/8	2591
TTFH 136	5 3/8	4991	3327	17 1/4	10 53/64	27 1/4	53 7/64	18 5/16	10 7/16	11 1/32	2837
TTFH 140	5 1/2	5283	3522	17 51/64	11 9/64	28 5/32	54 17/32	18 45/64	10 5/8	11 27/64	3086
TTFH 144	5 11/16	5587	3724	18 11/32	11 1/2	28 31/32	55 15/16	19 19/64	11 1/32	11 13/16	3373
TTFH 148	5 13/16	5901	3934	18 55/64	11 13/16	29 49/64	57 23/64	19 11/16	11 27/64	12 13/64	3637
TTFH 152	6	6227	4152	19 3/8	12 1/8	30 35/64	58 25/32	20 9/32	11 39/64	12 19/32	3932
TTFH 156	6 1/8	6553	4369	19 7/8	12 7/16	31 11/32	60 13/64	20 43/64	11 13/16	12 63/64	4240

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

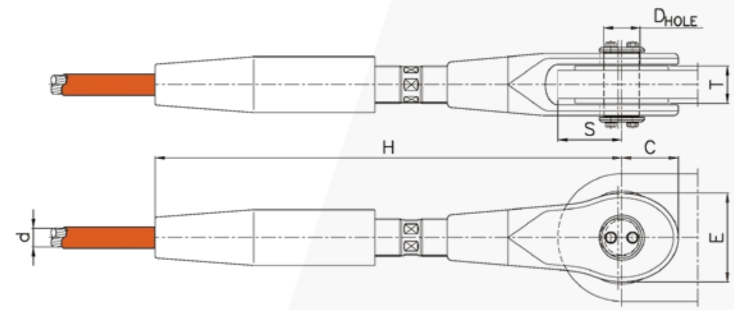
D_{HOLE} Hole Diameter

S_{max} Considering $T = T_{max}$

(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.



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	C (in)	D_{HOLE} (in)	E (in)	ØA (in)	H (in)	S_{max} (in)	T_{min} (in)	T_{max} (in)	Adj. (in)	Mass (lb)
TBFH 12	1/2	43	29	1 1/2	1	2 23/64	1 37/64	12 61/64	1 31/32	5/8	55/64	±1 3/16	5
TBFH 16	5/8	72	48	1 57/64	1 17/64	3 5/64	2 11/64	16 3/8	2 23/64	15/16	1 3/16	±1 37/64	12
TBFH 20	13/16	110	74	2 23/64	1 17/32	3 45/64	2 9/16	19 27/32	2 61/64	1 3/16	1 29/64	±1 31/32	21
TBFH 24	15/16	157	105	2 53/64	1 13/16	4 13/32	2 61/64	24 7/32	3 11/32	1 1/2	1 49/64	±2 9/16	34
TBFH 28	1 1/8	218	145	3 5/16	2 1/8	5 13/64	3 35/64	27 41/64	3 15/16	1 31/32	2 13/64	±2 61/64	54
TBFH 32	1 1/4	289	193	3 47/64	2 13/32	5 29/32	3 15/16	31 57/64	4 21/64	2 11/64	2 23/64	±3 35/64	79
TBFH 36	1 7/16	363	242	4 3/32	2 41/64	6 29/64	4 21/64	35 19/32	4 23/32	2 9/16	2 3/4	±3 15/16	109
TBFH 40	1 9/16	440	293	4 23/32	2 63/64	7 13/32	4 23/32	38 11/32	5 5/16	2 3/4	2 61/64	±4 21/64	146
TBFH 44	1 3/4	528	352	5 1/8	3 17/64	8 5/64	5 1/8	43 15/64	5 45/64	3 5/32	3 11/32	±4 23/32	195
TBFH 48	1 7/8	622	414	5 33/64	3 35/64	8 21/32	5 45/64	47	6 7/64	3 35/64	3 47/64	±5 1/8	263
TBFH 52	2	742	495	6 1/16	3 55/64	9 17/32	6 7/64	50 3/4	6 11/16	3 47/64	4 9/64	±5 33/64	321
TBFH 56	2 3/16	877	585	6 49/64	4 19/64	10 5/8	6 1/2	54 51/64	7 9/32	4 9/64	4 21/64	±5 29/32	401
TBFH 60	2 3/8	989	659	7 11/64	4 9/16	11 17/64	7 3/32	58 3/16	8 5/64	4 17/32	4 23/32	±6 19/64	494
TBFH 64	2 1/2	1124	749	7 23/32	4 7/8	12 1/8	7 31/64	62 23/32	8 15/32	4 59/64	5 1/8	±7 3/32	601
TBFH 68	2 11/16	1248	832	8 3/16	5 5/32	12 51/64	7 7/8	67 31/64	9 1/16	5 1/8	5 5/16	±7 7/8	711
TBFH 72	2 13/16	1405	937	8 37/64	5 7/16	13 37/64	8 17/64	71 1/32	9 29/64	5 33/64	5 45/64	±7 7/8	829
TBFH 76	3	1574	1049	9 9/64	5 3/4	14 3/8	8 55/64	73 15/16	10 3/64	5 29/32	6 7/64	±7 7/8	985
TBFH 80	3 1/8	1731	1154	9 41/64	6 1/16	15 13/64	9 1/4	77 41/64	10 5/8	6 7/64	6 1/2	±7 7/8	1139
TBFH 84	3 5/16	1911	1274	10 5/64	6 11/32	15 29/32	9 41/64	80 19/32	11 1/32	6 1/2	6 11/16	±7 7/8	1306
TBFH 88	3 7/16	2113	1409	11 7/64	7 3/64	17 13/32	10 15/64	84 9/64	11 13/16	6 57/64	7 3/32	±7 7/8	1546
TBFH 92	3 5/8	2293	1529	11 17/32	7 23/64	18 3/16	10 5/8	88 47/64	12 13/32	7 9/32	7 31/64	±7 7/8	1763
TBFH 96	3 3/4	2495	1664	12	7 41/64	18 31/32	11 1/32	91 1/2	12 51/64	7 31/64	7 7/8	±7 7/8	1960
TBFH 100	3 15/16	2698	1798	12 19/32	7 61/64	19 49/64	11 39/64	94 23/32	13 37/64	7 43/64	8 5/64	±7 7/8	2232
TBFH 104	4 1/8	2923	1948	13 5/64	8 17/64	20 35/64	12	97 31/64	13 31/32	8 5/64	8 15/32	±7 7/8	2465
TBFH 108	4 1/4	3147	2098	13 37/64	8 37/64	21 27/64	12 13/32	100 35/64	14 9/16	8 17/64	8 55/64	±7 7/8	2722
TBFH 112	4 7/16	3417	2278	14 1/4	8 15/16	22 7/16	12 51/64	103 25/64	15 5/32	8 15/32	9 1/16	±7 7/8	3008
TBFH 116	4 9/16	3631	2421	14 49/64	9 19/64	23 5/16	13 25/64	105 15/16	15 3/4	8 55/64	9 29/64	±7 7/8	3348
TBFH 120	4 3/4	3912	2608	15 9/32	9 9/16	24 3/32	13 25/32	108 45/64	16 9/64	9 1/16	9 27/32	±7 7/8	3675
TBFH 124	4 7/8	4148	2765	15 3/4	9 59/64	24 7/8	14 11/64	112 7/16	16 59/64	9 29/64	10 3/64	±7 7/8	4018
TBFH 128	5	4451	2967	16 7/32	10 13/64	25 19/32	14 9/16	115 25/64	17 21/64	9 27/32	10 7/16	±8 17/64	4396
TBFH 132	5 3/16	4699	3132	16 47/64	10 33/64	26 29/64	14 61/64	117 23/32	17 23/32	10 3/64	10 5/8	±8 17/64	4741
TBFH 136	5 3/8	4991	3327	17 1/4	10 53/64	27 1/4	15 23/64	120 25/64	18 5/16	10 7/16	11 1/32	±8 17/64	5144
TBFH 140	5 1/2	5283	3522	17 51/64	11 9/64	28 5/32	16 9/64	123 27/64	18 45/64	10 5/8	11 27/64	±8 17/64	5678
TBFH 144	5 11/16	5587	3724	18 11/32	11 1/2	28 31/32	16 17/32	125 29/32	19 19/64	11 1/32	11 13/16	±8 17/64	6137
TBFH 148	5 13/16	5901	3934	18 55/64	11 13/16	29 49/64	16 59/64	127 63/64	19 11/16	11 27/64	12 13/64	±8 17/64	6613
TBFH 152	6	6227	4152	19 3/8	12 1/8	30 35/64	17 33/64	130 43/64	20 9/32	11 39/64	12 19/32	±8 17/64	7191
TBFH 156	6 1/8	6553	4369	19 7/8	12 7/16	31 11/32	17 29/32	133 11/32	20 43/64	11 13/16	12 63/64	±8 17/64	7728

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

S_{max} Considering $T = T_{max}$

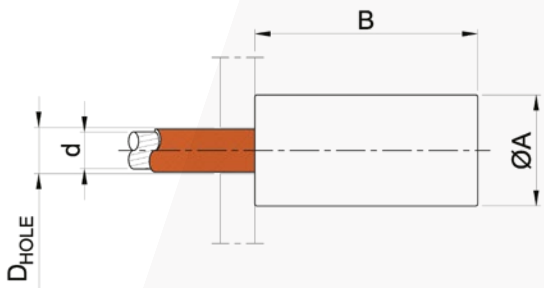
Adj. Adjustment

(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.

CYFH



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	Mass (lb)
CYFH 12	1/2	43	28	1 37/64	3 7/64	25/32	1
CYFH 16	5/8	72	48	2 11/64	4 1/64	1 1/32	3
CYFH 20	13/16	110	73	2 9/16	4 61/64	1 7/32	5
CYFH 24	15/16	157	105	2 61/64	6 1/32	1 29/64	8
CYFH 28	1 1/8	218	145	3 35/64	6 27/32	1 11/16	13
CYFH 32	1 1/4	289	193	3 15/16	7 53/64	1 57/64	18
CYFH 36	1 7/16	363	242	4 21/64	8 21/32	2 1/8	23
CYFH 40	1 9/16	440	293	4 23/32	9 11/16	2 21/64	31
CYFH 44	1 3/4	528	352	5 1/8	10 45/64	2 9/16	40
CYFH 48	1 7/8	622	414	5 45/64	11 37/64	2 51/64	55
CYFH 52	2	742	495	6 7/64	12 13/32	2 63/64	66
CYFH 56	2 3/16	877	585	6 1/2	13 11/32	3 15/64	80
CYFH 60	2 3/8	989	659	7 3/32	14 7/32	3 27/64	104
CYFH 64	2 1/2	1124	749	7 31/64	15 3/64	3 21/32	121
CYFH 68	2 11/16	1248	832	7 7/8	16 7/64	3 57/64	143
CYFH 72	2 13/16	1405	937	8 17/64	16 59/64	4 3/32	163
CYFH 76	3	1574	1049	8 55/64	17 3/4	4 21/64	200
CYFH 80	3 1/8	1731	1154	9 1/4	18 45/64	4 17/32	229
CYFH 84	3 5/16	1911	1274	9 41/64	19 17/32	4 49/64	258
CYFH 88	3 7/16	2113	1409	10 15/64	20 23/64	5	306
CYFH 92	3 5/8	2293	1529	10 5/8	21 19/64	5 13/64	343
CYFH 96	3 3/4	2495	1664	11 1/32	22 1/8	5 7/16	380
CYFH 100	3 15/16	2698	1798	11 39/64	23 1/32	5 5/8	447
CYFH 104	4 1/8	2923	1948	12	23 55/64	5 55/64	491
CYFH 108	4 1/4	3147	2098	12 13/32	24 51/64	6 7/64	541
CYFH 112	4 7/16	3417	2278	12 51/64	25 45/64	6 19/64	593
CYFH 116	4 9/16	3631	2420	13 25/64	26 17/32	6 17/32	677
CYFH 120	4 3/4	3912	2608	13 25/32	27 9/16	6 47/64	745
CYFH 124	4 7/8	4148	2765	14 11/64	28 25/64	6 31/32	807
CYFH 128	5	4451	2967	14 9/16	29 7/32	7 13/64	871
CYFH 132	5 3/16	4699	3132	14 61/64	30 3/64	7 13/32	939
CYFH 136	5 3/8	4991	3327	15 23/64	30 55/64	7 41/64	1010
CYFH 140	5 1/2	5283	3522	16 9/64	31 11/16	7 53/64	1179
CYFH 144	5 11/16	5587	3724	16 17/32	32 33/64	8 5/64	1262
CYFH 148	5 13/16	5901	3934	16 59/64	33 11/32	8 5/16	1349
CYFH 152	6	6227	4151	17 33/64	34 11/64	8 1/2	1492
CYFH 156	6 1/8	6553	4369	17 29/32	35	8 47/64	1589

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

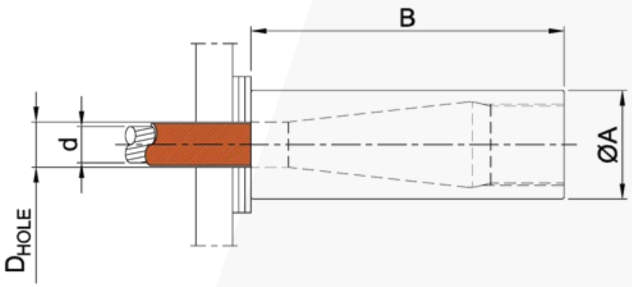
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

HDPE

ADJUSTABLE CYLINDRICAL SOCKET WITH SHIMS

CYSH



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	Mass (lb)
CYSH 12	1/2	43	28	1 37/64	4 9/16	25/32	2
CYSH 16	5/8	72	48	2 11/64	5 53/64	1 1/32	4
CYSH 20	13/16	110	73	2 9/16	7 1/8	1 7/32	7
CYSH 24	15/16	157	105	2 61/64	8 35/64	1 29/64	10
CYSH 28	1 1/8	218	145	3 35/64	9 23/32	1 11/16	17
CYSH 32	1 1/4	289	193	3 15/16	11 1/16	1 57/64	23
CYSH 36	1 7/16	363	242	4 21/64	12 7/16	2 1/8	31
CYSH 40	1 9/16	440	293	4 23/32	13 13/16	2 21/64	40
CYSH 44	1 3/4	528	352	5 1/8	15 13/64	2 9/16	50
CYSH 48	1 7/8	622	414	5 45/64	16 27/64	2 51/64	70
CYSH 52	2	742	495	6 7/64	17 19/32	2 63/64	85
CYSH 56	2 3/16	877	585	6 1/2	18 57/64	3 15/64	102
CYSH 60	2 3/8	989	659	7 3/32	20 1/8	3 27/64	133
CYSH 64	2 1/2	1124	749	7 31/64	21 19/64	3 21/32	153
CYSH 68	2 11/16	1248	832	7 7/8	22 23/32	3 57/64	182
CYSH 72	2 13/16	1405	937	8 17/64	23 57/64	4 3/32	207
CYSH 76	3	1574	1049	8 55/64	25 5/64	4 21/64	253
CYSH 80	3 1/8	1731	1154	9 1/4	26 3/8	4 17/32	289
CYSH 84	3 5/16	1911	1274	9 41/64	27 9/16	4 49/64	327
CYSH 88	3 7/16	2113	1409	10 15/64	28 47/64	5	390
CYSH 92	3 5/8	2293	1529	10 5/8	30 3/64	5 13/64	434
CYSH 96	3 3/4	2495	1664	11 1/32	31 7/32	5 7/16	479
CYSH 100	3 15/16	2698	1798	11 39/64	32 31/64	5 5/8	570
CYSH 104	4 1/8	2923	1948	12	33 21/32	5 55/64	624
CYSH 108	4 1/4	3147	2098	12 13/32	34 61/64	6 7/64	684
CYSH 112	4 7/16	3417	2278	12 51/64	36 7/32	6 19/64	747
CYSH 116	4 9/16	3631	2420	13 25/64	37 13/32	6 17/32	854
CYSH 120	4 3/4	3912	2608	13 25/32	38 25/32	6 47/64	944
CYSH 124	4 7/8	4148	2765	14 11/64	39 61/64	6 31/32	1018
CYSH 128	5	4451	2967	14 9/16	41 9/64	7 13/64	1096
CYSH 132	5 3/16	4699	3132	14 61/64	42 21/64	7 13/32	1178
CYSH 136	5 3/8	4991	3327	15 23/64	43 1/2	7 41/64	1275
CYSH 140	5 1/2	5283	3522	16 9/64	44 11/16	7 53/64	1496
CYSH 144	5 11/16	5587	3724	16 17/32	45 55/64	8 5/64	1597
CYSH 148	5 13/16	5901	3934	16 59/64	47 3/64	8 5/16	1716
CYSH 152	6	6227	4151	17 33/64	48 15/64	8 1/2	1900
CYSH 156	6 1/8	6553	4369	17 29/32	49 13/32	8 47/64	2018

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

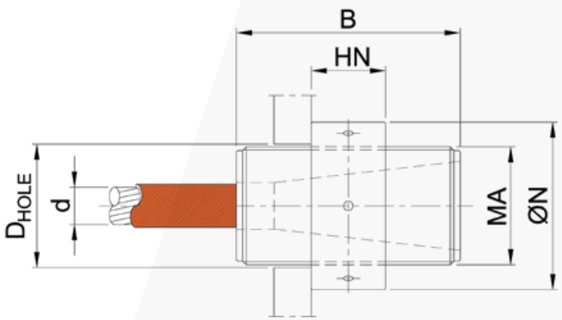
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	MA (in)	B (in)	D_{HOLE} (in)	ØN (in)	HN (in)	Adj. (in)	Mass (lb)
CYTH 12	1/2	43	28	1 49/64	3 7/64	1 57/64	2 9/16	63/64	± 15/16	2
CYTH 16	5/8	72	48	2 11/64	4 1/64	2 21/64	3 5/32	1 3/8	± 1 7/32	4
CYTH 20	13/16	110	73	2 3/4	4 61/64	2 61/64	3 15/16	1 37/64	± 1 37/64	8
CYTH 24	15/16	157	105	3 5/32	6 1/32	3 11/32	4 17/32	1 31/32	± 1 57/64	13
CYTH 28	1 1/8	218	145	3 35/64	6 27/32	3 47/64	5 1/8	2 23/64	± 2 1/8	19
CYTH 32	1 1/4	289	193	4 9/64	7 53/64	4 21/64	5 29/32	2 9/16	± 2 33/64	29
CYTH 36	1 7/16	363	242	4 17/32	8 21/32	4 23/32	6 1/2	2 61/64	± 2 43/64	39
CYTH 40	1 9/16	440	293	5 1/8	9 11/16	5 5/16	7 9/32	3 5/32	± 3 7/64	55
CYTH 44	1 3/4	528	352	5 33/64	10 45/64	5 45/64	7 7/8	3 35/64	± 3 27/64	71
CYTH 48	1 7/8	622	414	5 29/32	11 37/64	6 7/64	8 17/64	3 15/16	± 3 21/32	85
CYTH 52	2	742	495	6 1/2	12 13/32	6 11/16	9 1/4	4 9/64	± 3 31/32	114
CYTH 56	2 3/16	877	585	6 57/64	13 11/32	7 3/32	9 41/64	4 17/32	± 4 1/4	135
CYTH 60	2 3/8	989	659	7 31/64	14 7/32	7 43/64	10 5/8	4 23/32	± 4 17/32	172
CYTH 64	2 1/2	1124	749	7 7/8	15 3/64	8 3/16	11 1/32	5 1/8	± 4 23/32	197
CYTH 68	2 11/16	1248	832	8 17/64	16 7/64	8 37/64	11 39/64	5 33/64	± 5 5/64	234
CYTH 72	2 13/16	1405	937	8 55/64	16 59/64	9 11/64	12 13/32	5 45/64	± 5 25/64	282
CYTH 76	3	1574	1049	9 1/4	17 3/4	9 41/64	12 63/64	6 7/64	± 5 33/64	320
CYTH 80	3 1/8	1731	1154	9 27/32	18 45/64	10 15/64	13 25/32	6 19/64	± 5 55/64	383
CYTH 84	3 5/16	1911	1274	10 15/64	19 17/32	10 5/8	14 3/8	6 11/16	± 6 7/64	434
CYTH 88	3 7/16	2113	1409	10 5/8	20 23/64	11 1/32	14 61/64	7 3/32	± 6 19/64	490
CYTH 92	3 5/8	2293	1529	11 7/32	21 19/64	11 11/16	15 3/4	7 9/32	± 6 39/64	565
CYTH 96	3 3/4	2495	1664	11 39/64	22 1/8	12 3/32	16 17/32	7 43/64	± 6 27/32	642
CYTH 100	3 15/16	2698	1798	12 13/64	23 1/32	12 43/64	17 1/8	7 7/8	± 7 13/64	728
CYTH 104	4 1/8	2923	1948	12 19/32	23 55/64	13 5/64	17 23/32	8 17/64	± 7 13/32	807
CYTH 108	4 1/4	3147	2098	13 3/16	24 51/64	13 21/32	18 1/2	8 21/32	± 7 19/32	913
CYTH 112	4 7/16	3417	2278	13 25/32	25 45/64	14 3/8	19 19/64	8 55/64	± 7 61/64	1033
CYTH 116	4 9/16	3631	2420	14 11/64	26 17/32	14 49/64	20 5/64	9 1/4	± 8 5/32	1148
CYTH 120	4 3/4	3912	2608	14 9/16	27 9/16	15 5/32	20 15/32	9 29/64	± 8 37/64	1239
CYTH 124	4 7/8	4148	2765	15 5/32	28 25/64	15 15/16	21 17/64	9 27/32	± 8 13/16	1375
CYTH 128	5	4451	2967	15 35/64	29 7/32	16 11/32	22 3/64	10 15/64	± 9 1/64	1513
CYTH 132	5 3/16	4699	3132	16 9/64	30 3/64	16 59/64	22 53/64	10 7/16	± 9 21/64	1676
CYTH 136	5 3/8	4991	3327	16 17/32	30 55/64	17 21/64	23 15/64	10 53/64	± 9 9/16	1776
CYTH 140	5 1/2	5283	3522	17 1/8	31 11/16	18 7/64	24 1/64	11 1/32	± 9 7/8	1962
CYTH 144	5 11/16	5587	3724	17 33/64	32 33/64	18 1/2	24 51/64	11 27/64	± 10 5/64	2137
CYTH 148	5 13/16	5901	3934	17 29/32	33 11/32	18 57/64	25 13/64	11 13/16	± 10 5/16	2270
CYTH 152	6	6227	4151	18 1/2	34 11/64	19 11/16	25 63/64	12	± 10 5/8	2482
CYTH 156	6 1/8	6553	4369	19 3/32	35	20 9/32	26 49/64	12 13/32	± 10 53/64	2723



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

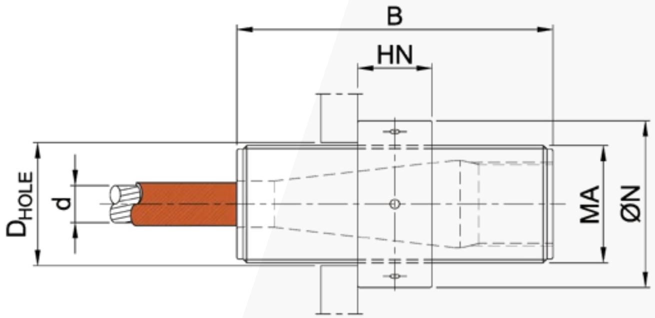
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$

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} (in)	N_{uk} [(1)] (kip)	N_{Rd} [(2)] (kip)	MA (in)	B (in)	D_{HOLE} (in)	ØN (in)	HN (in)	Adj. (in)	Mass (lb)
CYNH 12	1/2	43	28	1 49/64	4 9/16	1 57/64	2 9/16	63/64	± 1 11/16	3
CYNH 16	5/8	72	48	2 11/64	5 53/64	2 21/64	3 5/32	1 3/8	± 2 1/8	5
CYNH 20	13/16	110	73	2 3/4	7 1/8	2 61/64	3 15/16	1 37/64	± 2 43/64	10
CYNH 24	15/16	157	105	3 5/32	8 35/64	3 11/32	4 17/32	1 31/32	± 3 3/16	15
CYNH 28	1 1/8	218	145	3 35/64	9 23/32	3 47/64	5 1/8	2 23/64	± 3 37/64	22
CYNH 32	1 1/4	289	193	4 9/64	11 1/16	4 21/64	5 29/32	2 9/16	± 4 9/64	35
CYNH 36	1 7/16	363	242	4 17/32	12 7/16	4 23/32	6 1/2	2 61/64	± 4 39/64	46
CYNH 40	1 9/16	440	293	5 1/8	13 13/16	5 5/16	7 9/32	3 5/32	± 5 13/64	66
CYNH 44	1 3/4	528	352	5 33/64	15 13/64	5 45/64	7 7/8	3 35/64	± 5 43/64	84
CYNH 48	1 7/8	622	414	5 29/32	16 27/64	6 7/64	8 17/64	3 15/16	± 6 7/64	100
CYNH 52	2	742	495	6 1/2	17 19/32	6 11/16	9 1/4	4 9/64	± 6 37/64	136
CYNH 56	2 3/16	877	585	6 57/64	18 57/64	7 3/32	9 41/64	4 17/32	± 7 3/64	160
CYNH 60	2 3/8	989	659	7 31/64	20 1/8	7 43/64	10 5/8	4 23/32	± 7 31/64	203
CYNH 64	2 1/2	1124	749	7 7/8	21 19/64	8 3/16	11 1/32	5 1/8	± 7 7/8	232
CYNH 68	2 11/16	1248	832	8 17/64	22 23/32	8 37/64	11 39/64	5 33/64	± 8 25/64	276
CYNH 72	2 13/16	1405	937	8 55/64	23 57/64	9 11/64	12 13/32	5 45/64	± 8 55/64	334
CYNH 76	3	1574	1049	9 1/4	25 5/64	9 41/64	12 63/64	6 7/64	± 9 11/64	375
CYNH 80	3 1/8	1731	1154	9 27/32	26 3/8	10 15/64	13 25/32	6 19/64	± 9 23/32	451
CYNH 84	3 5/16	1911	1274	10 15/64	27 9/16	10 5/8	14 3/8	6 11/16	± 10 1/8	514
CYNH 88	3 7/16	2113	1409	10 5/8	28 47/64	11 1/32	14 61/64	7 3/32	± 10 33/64	577
CYNH 92	3 5/8	2293	1529	11 7/32	30 3/64	11 11/16	15 3/4	7 9/32	± 10 63/64	664
CYNH 96	3 3/4	2495	1664	11 39/64	31 7/32	12 3/32	16 17/32	7 43/64	± 11 3/8	750
CYNH 100	3 15/16	2698	1798	12 13/64	32 31/64	12 43/64	17 1/8	7 7/8	± 11 59/64	861
CYNH 104	4 1/8	2923	1948	12 19/32	33 21/32	13 5/64	17 23/32	8 17/64	± 12 21/64	950
CYNH 108	4 1/4	3147	2098	13 3/16	34 61/64	13 21/32	18 1/2	8 21/32	± 12 43/64	1072
CYNH 112	4 7/16	3417	2278	13 25/32	36 7/32	14 3/8	19 19/64	8 55/64	± 13 15/64	1215
CYNH 116	4 9/16	3631	2420	14 11/64	37 13/32	14 49/64	20 5/64	9 1/4	± 13 5/8	1343
CYNH 120	4 3/4	3912	2608	14 9/16	38 25/32	15 5/32	20 15/32	9 29/64	± 14 7/32	1456
CYNH 124	4 7/8	4148	2765	15 5/32	39 61/64	15 15/16	21 17/64	9 27/32	± 14 39/64	1614
CYNH 128	5	4451	2967	15 35/64	41 9/64	16 11/32	22 3/64	10 15/64	± 15	1767
CYNH 132	5 3/16	4699	3132	16 9/64	42 21/64	16 59/64	22 53/64	10 7/16	± 15 15/32	1962
CYNH 136	5 3/8	4991	3327	16 17/32	43 1/2	17 21/64	23 15/64	10 53/64	± 15 55/64	2085
CYNH 140	5 1/2	5283	3522	17 1/8	44 11/16	18 7/64	24 1/64	11 1/32	± 16 3/8	2308
CYNH 144	5 11/16	5587	3724	17 33/64	45 55/64	18 1/2	24 51/64	11 27/64	± 16 49/64	2502
CYNH 148	5 13/16	5901	3934	17 29/32	47 3/64	18 57/64	25 13/64	11 13/16	± 17 11/64	2657
CYNH 152	6	6227	4151	18 1/2	48 15/64	19 11/16	25 63/64	12	± 17 41/64	2923
CYNH 156	6 1/8	6553	4369	19 3/32	49 13/32	20 9/32	26 49/64	12 13/32	± 17 63/64	3210

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Adj. Adjustment

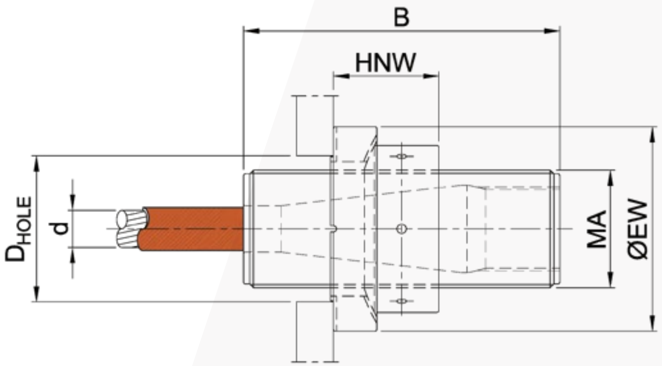
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$

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 SPHERICAL NUT AND WASHER

CYWH



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	MA (in)	B (in)	D_{HOLE} (in)	HNW (in)	ØEW (in)	Adj. (in)	Mass (lb)
CYWH 12	1/2	43	28	1 49/64	4 9/16	2 1/4	1 7/16	3 5/32	± 1 21/32	4
CYWH 16	5/8	72	48	2 11/64	5 53/64	2 43/64	1 55/64	3 15/16	± 2 3/32	7
CYWH 20	13/16	110	73	2 3/4	7 1/8	3 25/64	2 5/16	4 23/32	± 2 19/32	13
CYWH 24	15/16	157	105	3 5/32	8 35/64	3 57/64	2 53/64	5 33/64	± 3 7/64	20
CYWH 28	1 1/8	218	145	3 35/64	9 23/32	4 3/8	3 25/64	6 19/64	± 3 1/2	30
CYWH 32	1 1/4	289	193	4 9/64	11 1/16	5 1/8	3 47/64	7 3/32	± 4 1/16	45
CYWH 36	1 7/16	363	242	4 17/32	12 7/16	5 5/8	4 7/32	7 7/8	± 4 17/32	60
CYWH 40	1 9/16	440	293	5 1/8	13 13/16	6 11/32	4 37/64	9 1/16	± 5 5/64	87
CYWH 44	1 3/4	528	352	5 33/64	15 13/64	6 27/32	4 15/16	9 29/64	± 5 19/32	106
CYWH 48	1 7/8	622	414	5 29/32	16 27/64	7 21/64	5 1/2	10 15/64	± 5 63/64	129
CYWH 52	2	742	495	6 1/2	17 19/32	8 5/64	5 51/64	11 27/64	± 6 29/64	176
CYWH 56	2 3/16	877	585	6 57/64	18 57/64	8 35/64	6 13/32	11 13/16	± 6 59/64	204
CYWH 60	2 3/8	989	659	7 31/64	20 1/8	9 19/64	6 45/64	12 63/64	± 7 21/64	261
CYWH 64	2 1/2	1124	749	7 7/8	21 19/64	9 49/64	7 7/64	13 25/64	± 7 23/32	293
CYWH 68	2 11/16	1248	832	8 17/64	22 23/32	10 9/32	7 11/16	14 11/64	± 8 15/64	349
CYWH 72	2 13/16	1405	937	8 55/64	23 57/64	10 63/64	7 31/32	14 61/64	± 8 45/64	419
CYWH 76	3	1574	1049	9 1/4	25 5/64	11 1/2	8 47/64	15 3/4	± 9 1/64	483
CYWH 80	3 1/8	1731	1154	9 27/32	26 3/8	12 13/64	8 57/64	16 9/64	± 9 9/16	557
CYWH 84	3 5/16	1911	1274	10 15/64	27 9/16	12 23/32	9 1/4	16 17/32	± 9 61/64	622
CYWH 88	3 7/16	2113	1409	10 5/8	28 47/64	13 15/64	10	17 21/64	± 10 5/16	710
CYWH 92	3 5/8	2293	1529	11 7/32	30 3/64	13 15/16	10 35/64	18 7/64	± 10 25/32	822
CYWH 96	3 3/4	2495	1664	11 39/64	31 7/32	14 29/64	10 53/64	19 19/64	± 11 3/16	939
CYWH 100	3 15/16	2698	1798	12 13/64	32 31/64	15 5/32	11 27/64	20 5/64	± 11 11/16	1080
CYWH 104	4 1/8	2923	1948	12 19/32	33 21/32	15 43/64	11 51/64	20 15/32	± 12 3/32	1172
CYWH 108	4 1/4	3147	2098	13 3/16	34 61/64	16 11/32	12 17/32	21 21/32	± 12 7/16	1347
CYWH 112	4 7/16	3417	2278	13 25/32	36 7/32	17 3/32	12 43/64	22 7/16	± 12 63/64	1508
CYWH 116	4 9/16	3631	2420	14 11/64	37 13/32	17 9/16	12 15/16	22 53/64	± 13 25/64	1659
CYWH 120	4 3/4	3912	2608	14 9/16	38 25/32	18 7/64	13 5/32	23 15/64	± 13 15/16	1736
CYWH 124	4 7/8	4148	2765	15 5/32	39 61/64	18 25/32	13 57/64	23 5/8	± 14 21/64	1932
CYWH 128	5	4451	2967	15 35/64	41 9/64	19 19/64	14 13/64	24 13/32	± 14 23/32	2112
CYWH 132	5 3/16	4699	3132	16 9/64	42 21/64	20	14 23/64	25 13/64	± 15 13/64	2326
CYWH 136	5 3/8	4991	3327	16 17/32	43 1/2	20 33/64	15 9/16	25 19/32	± 15 19/32	2503
CYWH 140	5 1/2	5283	3522	17 1/8	44 11/16	21 7/32	15 21/32	26 49/64	± 16 1/16	2778
CYWH 144	5 11/16	5587	3724	17 33/64	45 55/64	21 47/64	15 31/32	27 9/16	± 16 29/64	3007
CYWH 148	5 13/16	5901	3934	17 29/32	47 3/64	22 1/4	16 37/64	27 61/64	± 16 27/32	3183
CYWH 152	6	6227	4151	18 1/2	48 15/64	22 61/64	16 23/32	28 47/64	± 17 21/64	3474
CYWH 156	6 1/8	6553	4369	19 3/32	49 13/32	23 21/32	17 17/64	29 17/32	± 17 43/64	3803

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Adj. Adjustment

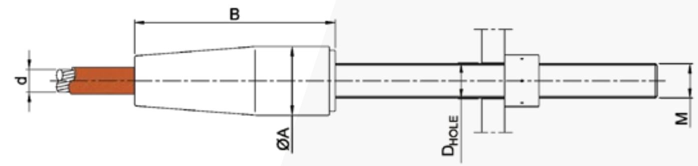
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$

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

CYBH



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	M (in)	Mass (lb)
CYBH 12	1/2	36	24	1 37/64	4 27/32	27/32	25/32 x 3/32	1
CYBH 16	5/8	63	42	2 11/64	6 7/32	1 1/32	15/16 x 1/8	3
CYBH 20	13/16	99	66	2 9/16	7 33/64	1 17/64	1 3/16 x 9/64	6
CYBH 24	15/16	139	93	2 61/64	8 15/16	1 1/2	1 27/64 x 1/8	9
CYBH 28	1 1/8	191	127	3 35/64	10 1/8	1 49/64	1 21/32 x 1/8	15
CYBH 32	1 1/4	259	172	3 15/16	11 29/64	2	1 57/64 x 1/8	20
CYBH 36	1 7/16	315	210	4 21/64	12 53/64	2 11/64	2 3/64 x 1/8	28
CYBH 40	1 9/16	393	262	4 23/32	14 7/32	2 31/64	2 23/64 x 5/32	36
CYBH 44	1 3/4	472	315	5 1/8	15 25/32	2 41/64	2 33/64 x 5/32	47
CYBH 48	1 7/8	562	375	5 45/64	17	2 61/64	2 53/64 x 5/32	63
CYBH 52	2	663	442	6 7/64	18 3/16	3 5/16	3 5/32 x 15/64	77
CYBH 56	2 3/16	764	510	6 1/2	19 31/64	3 1/2	3 11/32 x 15/64	92
CYBH 60	2 3/8	877	585	7 3/32	20 45/64	3 45/64	3 35/64 x 15/64	119
CYBH 64	2 1/2	1012	674	7 31/64	21 57/64	3 57/64	3 47/64 x 15/64	141
CYBH 68	2 11/16	1124	749	7 7/8	23 5/16	4 19/64	4 9/64 x 15/64	163
CYBH 72	2 13/16	1259	839	8 17/64	24 11/16	4 31/64	4 21/64 x 15/64	189
CYBH 76	3	1416	944	8 55/64	25 55/64	4 7/8	4 23/32 x 15/64	228
CYBH 80	3 1/8	1574	1049	9 1/4	27 11/64	5 1/8	4 59/64 x 15/64	262
CYBH 84	3 5/16	1731	1154	9 41/64	28 11/32	5 5/16	5 1/8 x 15/64	298
CYBH 88	3 7/16	1911	1274	10 15/64	29 17/32	5 33/64	5 5/16 x 15/64	352
CYBH 92	3 5/8	2091	1394	10 5/8	30 53/64	5 45/64	5 33/64 x 15/64	395
CYBH 96	3 3/4	2271	1514	11 1/32	32	5 29/32	5 45/64 x 15/64	440
CYBH 100	3 15/16	2450	1634	11 39/64	33 17/64	6 19/64	6 7/64 x 15/64	510
CYBH 104	4 1/8	2653	1768	12	34 29/64	6 1/2	6 19/64 x 15/64	565
CYBH 108	4 1/4	2855	1903	12 13/32	35 3/4	6 11/16	6 1/2 x 5/16	624
CYBH 112	4 7/16	3125	2083	12 51/64	37	7 3/32	6 57/64 x 5/16	681
CYBH 116	4 9/16	3350	2233	13 25/64	38 3/16	7 9/32	7 3/32 x 5/16	774
CYBH 120	4 3/4	3574	2383	13 25/32	39 9/16	7 31/64	7 9/32 x 5/16	852
CYBH 124	4 7/8	3822	2548	14 11/64	40 3/4	7 43/64	7 31/64 x 5/16	930
CYBH 128	5	4069	2713	14 9/16	41 59/64	8 15/32	8 17/64 x 5/16	987
CYBH 132	5 3/16	4316	2878	14 61/64	43 7/64	8 55/64	8 21/32 x 25/64	1062
CYBH 136	5 3/8	4586	3057	15 23/64	44 19/64	9 1/4	9 1/16 x 25/64	1141
CYBH 140	5 1/2	4856	3237	16 9/64	45 15/32	9 1/4	9 1/16 x 25/64	1327
CYBH 144	5 11/16	5148	3432	16 17/32	46 21/32	9 41/64	9 29/64 x 25/64	1422
CYBH 148	5 13/16	5463	3642	16 47/64	47 41/64	9 27/32	9 41/64 x 25/64	1471
CYBH 152	6	5755	3837	17 1/8	48 13/16	10 3/64	9 27/32 x 25/64	1578
CYBH 156	6 1/8	6047	4032	17 33/64	50	10 15/64	10 3/64 x 25/64	1690

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Mass Mass Without Threaded Rod

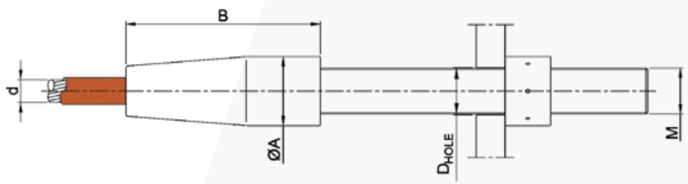
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

(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} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	M (in)	Mass (lb)
CYMH 12	1/2	43	28	1 37/64	4 17/32	1 9/64	1 1/16 x 1/8	1
CYMH 16	5/8	72	48	2 11/64	5 29/32	1 1/2	1 27/64 x 1/8	3
CYMH 20	13/16	110	73	2 9/16	7 7/16	1 49/64	1 21/32 x 1/8	5
CYMH 24	15/16	157	105	2 61/64	8 31/32	2 21/64	1 31/32 x 1/8	8
CYMH 28	1 1/8	218	145	3 35/64	10 5/64	2 21/64	2 13/64 x 5/32	13
CYMH 32	1 1/4	289	193	3 15/16	11 39/64	2 41/64	2 33/64 x 5/32	19
CYMH 36	1 7/16	363	242	4 21/64	13 7/64	2 61/64	2 53/64 x 5/32	25
CYMH 40	1 9/16	440	293	4 23/32	14 51/64	3 5/16	3 5/32 x 5/32	34
CYMH 44	1 3/4	528	352	5 1/8	16 1/2	3 45/64	3 35/64 x 15/64	42
CYMH 48	1 7/8	622	414	5 45/64	17 53/64	4 3/32	3 15/16 x 15/64	60
CYMH 52	2	742	495	6 7/64	19 9/64	4 19/64	4 9/64 x 15/64	74
CYMH 56	2 3/16	877	585	6 1/2	20 3/4	4 11/16	4 17/32 x 15/64	89
CYMH 60	2 3/8	989	659	7 3/32	22 3/32	4 7/8	4 23/32 x 15/64	117
CYMH 64	2 1/2	1124	749	7 31/64	23 25/64	5 5/16	5 1/8 x 15/64	137
CYMH 68	2 11/16	1248	832	7 7/8	24 23/32	5 33/64	5 5/16 x 15/64	161
CYMH 72	2 13/16	1405	937	8 17/64	26 7/32	5 45/64	5 33/64 x 15/64	189
CYMH 76	3	1574	1049	8 55/64	27 33/64	6 7/64	5 29/32 x 15/64	228
CYMH 80	3 1/8	1731	1154	9 1/4	28 15/16	6 1/2	6 19/64 x 15/64	260
CYMH 84	3 5/16	1911	1274	9 41/64	31 1/32	6 11/16	6 1/2 x 15/64	307
CYMH 88	3 7/16	2113	1409	10 15/64	32 21/64	7 3/32	6 57/64 x 15/64	360
CYMH 92	3 5/8	2293	1529	10 5/8	33 47/64	7 31/64	7 9/32 x 5/16	400
CYMH 96	3 3/4	2495	1664	11 1/32	35 3/64	7 43/64	7 31/64 x 5/16	448
CYMH 100	3 15/16	2698	1798	11 39/64	36 27/64	8 5/64	7 7/8 x 5/16	521
CYMH 104	4 1/8	2923	1948	12	37 23/32	8 17/64	8 5/64 x 5/16	581
CYMH 108	4 1/4	3147	2098	12 13/32	39 9/64	8 15/32	8 17/64 x 5/16	645
CYMH 112	4 7/16	3417	2278	12 51/64	40 33/64	8 55/64	8 21/32 x 5/16	702
CYMH 116	4 9/16	3631	2420	13 25/64	41 13/16	9 1/4	9 1/16 x 5/16	794
CYMH 120	4 3/4	3912	2608	13 25/32	43 5/16	9 41/64	9 29/64 x 5/16	866
CYMH 124	4 7/8	4148	2765	14 11/64	44 39/64	9 27/32	9 41/64 x 5/16	949
CYMH 128	5	4451	2967	14 9/16	45 29/32	10 9/32	10 3/64 x 5/16	1022
CYMH 132	5 3/16	4699	3132	14 61/64	47 13/64	10 15/32	10 15/64 x 5/16	1112
CYMH 136	5 3/8	4991	3327	15 23/64	48 1/2	10 55/64	10 5/8 x 5/16	1192
CYMH 140	5 1/2	5283	3522	16 9/64	50	11 17/64	11 1/32 x 25/64	1381
CYMH 144	5 11/16	5587	3724	16 17/32	51 19/64	11 29/64	11 7/32 x 25/64	1494
CYMH 148	5 13/16	5901	3934	16 59/64	52 19/32	11 11/16	11 27/64 x 25/64	1610
CYMH 152	6	6227	4151	17 33/64	53 57/64	12 3/32	11 13/16 x 25/64	1768
CYMH 156	6 1/8	6553	4369	17 29/32	55 13/64	12 31/64	12 13/64 x 25/64	1878

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: $\gamma_R = 1.0$

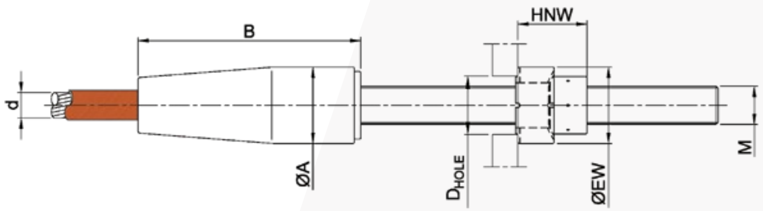
(2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
Hexagonal nut for M ≤ 80 mm

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

HDPE

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

CYRH



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	ØEW (in)	HNW (in)	M (in)	Mass (lb)
CYRH 12	1/2	36	24	1 37/64	4 27/32	1 7/32	1 37/64	1 17/32	25/32 x 3/32	2
CYRH 16	5/8	63	42	2 11/64	6 7/32	1 1/2	1 31/32	1 7/8	15/16 x 1/8	4
CYRH 20	13/16	99	66	2 9/16	7 33/64	1 13/16	2 23/64	2 5/64	1 3/16 x 9/64	6
CYRH 24	15/16	139	93	2 61/64	8 15/16	2 11/64	3 5/32	2 31/64	1 27/64 x 1/8	11
CYRH 28	1 1/8	191	127	3 35/64	10 1/8	2 9/16	3 35/64	3 5/64	1 21/32 x 1/8	18
CYRH 32	1 1/4	259	172	3 15/16	11 29/64	2 29/32	3 15/16	3 15/32	1 57/64 x 1/8	24
CYRH 36	1 7/16	315	210	4 21/64	12 53/64	3 3/16	4 21/64	3 47/64	2 3/64 x 1/8	33
CYRH 40	1 9/16	393	262	4 23/32	14 7/32	3 5/8	4 23/32	4 1/4	2 23/64 x 5/32	43
CYRH 44	1 3/4	472	315	5 1/8	15 25/32	3 57/64	5 1/8	4 19/32	2 33/64 x 5/32	56
CYRH 48	1 7/8	562	375	5 45/64	17	4 3/8	5 29/32	5 3/64	2 53/64 x 5/32	77
CYRH 52	2	663	442	6 7/64	18 3/16	4 51/64	6 11/16	5 17/32	3 5/32 x 15/64	96
CYRH 56	2 3/16	764	510	6 1/2	19 31/64	5 1/8	6 11/16	6 9/64	3 11/32 x 15/64	113
CYRH 60	2 3/8	877	585	7 3/32	20 45/64	5 7/16	7 3/32	6 27/64	3 35/64 x 15/64	144
CYRH 64	2 1/2	1012	674	7 31/64	21 57/64	5 3/4	7 31/64	6 31/32	3 47/64 x 15/64	171
CYRH 68	2 11/16	1124	749	7 7/8	23 5/16	6 19/64	8 17/64	7 21/64	4 9/64 x 15/64	200
CYRH 72	2 13/16	1259	839	8 17/64	24 11/16	6 39/64	8 21/32	7 15/16	4 21/64 x 15/64	235
CYRH 76	3	1416	944	8 55/64	25 55/64	7 1/8	9 29/64	8 9/32	4 23/32 x 15/64	282
CYRH 80	3 1/8	1574	1049	9 1/4	27 11/64	7 7/16	9 27/32	8 13/16	4 59/64 x 15/64	326
CYRH 84	3 5/16	1731	1154	9 41/64	28 11/32	7 3/4	10 15/64	9 1/32	5 1/8 x 15/64	367
CYRH 88	3 7/16	1911	1274	10 15/64	29 17/32	8 7/64	10 5/8	9 33/64	5 5/16 x 15/64	433
CYRH 92	3 5/8	2091	1394	10 5/8	30 53/64	8 25/64	11 1/32	9 23/32	5 33/64 x 15/64	483
CYRH 96	3 3/4	2271	1514	11 1/32	32	8 47/64	11 27/64	10 17/64	5 45/64 x 15/64	542
CYRH 100	3 15/16	2450	1634	11 39/64	33 17/64	9 1/4	12 13/64	10 39/64	6 7/64 x 15/64	627
CYRH 104	4 1/8	2653	1768	12	34 29/64	9 9/16	12 19/32	11 7/32	6 19/64 x 15/64	698
CYRH 108	4 1/4	2855	1903	12 13/32	35 3/4	9 7/8	12 63/64	11 3/4	6 1/2 x 5/16	775
CYRH 112	4 7/16	3125	2083	12 51/64	37	10 7/16	13 25/32	12 3/32	6 57/64 x 5/16	851
CYRH 116	4 9/16	3350	2233	13 25/64	38 3/16	10 3/4	14 11/64	12 45/64	7 3/32 x 5/16	965
CYRH 120	4 3/4	3574	2383	13 25/32	39 9/16	11 1/16	14 9/16	12 55/64	7 9/32 x 5/16	1055
CYRH 124	4 7/8	3822	2548	14 11/64	40 3/4	11 3/8	14 61/64	13 29/64	7 31/64 x 5/16	1156
CYRH 128	5	4069	2713	14 9/16	41 59/64	12 23/64	16 9/64	14 7/64	8 17/64 x 5/16	1246
CYRH 132	5 3/16	4316	2878	14 61/64	43 7/64	12 7/8	16 59/64	14 29/64	8 21/32 x 25/64	1347
CYRH 136	5 3/8	4586	3057	15 23/64	44 19/64	13 25/64	17 23/32	14 51/64	9 1/16 x 25/64	1454
CYRH 140	5 1/2	4856	3237	16 9/64	45 15/32	13 1/2	17 23/32	15 13/64	9 1/16 x 25/64	1659
CYRH 144	5 11/16	5148	3432	16 17/32	46 21/32	14 1/64	18 1/2	15 35/64	9 29/64 x 25/64	1784
CYRH 148	5 13/16	5463	3642	16 47/64	47 41/64	14 21/64	18 57/64	16 7/64	9 41/64 x 25/64	1870
CYRH 152	6	5755	3837	17 1/8	48 13/16	14 41/64	19 19/64	16 19/64	9 27/32 x 25/64	1992
CYRH 156	6 1/8	6047	4032	17 33/64	50	14 61/64	19 11/16	16 57/64	10 3/64 x 25/64	2145

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

Mass Mass Without Threaded Rod

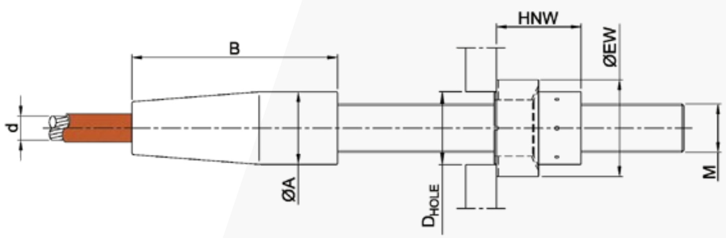
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

(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, SPHERICAL NUT AND WASHER

CYVH



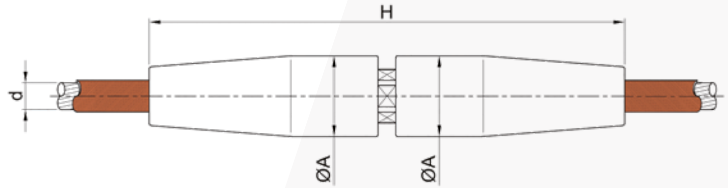
PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	B (in)	D_{HOLE} (in)	ØEW (in)	HNW (in)	M (in)	Mass (lb)
CYVH 12	1/2	43	28	1 37/64	4 17/32	1 1/2	2 23/64	1 25/32	1 1/16 x 1/8	2
CYVH 16	5/8	72	48	2 11/64	5 29/32	2	3 5/32	2 9/32	1 27/64 x 1/8	5
CYVH 20	13/16	110	73	2 9/16	7 7/16	2 23/64	3 35/64	2 31/64	1 21/32 x 1/8	7
CYVH 24	15/16	157	105	2 61/64	8 31/32	3 5/64	4 23/32	3 11/64	1 31/32 x 1/8	13
CYVH 28	1 1/8	218	145	3 35/64	10 5/64	3 5/32	4 23/32	3 37/64	2 13/64 x 5/32	19
CYVH 32	1 1/4	289	193	3 15/16	11 39/64	3 5/8	5 1/8	4 5/64	2 33/64 x 5/32	26
CYVH 36	1 7/16	363	242	4 21/64	13 7/64	4 1/16	5 33/64	4 29/64	2 53/64 x 5/32	34
CYVH 40	1 9/16	440	293	4 23/32	14 51/64	4 31/64	5 29/32	4 61/64	3 5/32 x 5/32	45
CYVH 44	1 3/4	528	352	5 1/8	16 1/2	5 3/64	7 31/64	5 7/16	3 35/64 x 15/64	63
CYVH 48	1 7/8	622	414	5 45/64	17 53/64	5 35/64	8 17/64	5 63/64	3 15/16 x 15/64	87
CYVH 52	2	742	495	6 7/64	19 9/64	5 29/32	9 1/16	6 11/32	4 9/64 x 15/64	110
CYVH 56	2 3/16	877	585	6 1/2	20 3/4	6 27/64	9 27/32	7 5/64	4 17/32 x 15/64	138
CYVH 60	2 3/8	989	659	7 3/32	22 3/32	6 47/64	9 29/64	7 1/2	4 23/32 x 15/64	162
CYVH 64	2 1/2	1124	749	7 31/64	23 25/64	7 9/32	10 15/64	8 15/64	5 1/8 x 15/64	195
CYVH 68	2 11/16	1248	832	7 7/8	24 23/32	7 19/32	10 5/8	8 21/64	5 5/16 x 15/64	223
CYVH 72	2 13/16	1405	937	8 17/64	26 7/32	7 29/32	11 1/32	8 59/64	5 33/64 x 15/64	264
CYVH 76	3	1574	1049	8 55/64	27 33/64	8 27/64	11 13/16	9 17/64	5 29/32 x 15/64	314
CYVH 80	3 1/8	1731	1154	9 1/4	28 15/16	9 1/64	12 19/32	10 1/32	6 19/64 x 15/64	366
CYVH 84	3 5/16	1911	1274	9 41/64	31 1/32	9 19/64	12 63/64	10 11/64	6 1/2 x 15/64	420
CYVH 88	3 7/16	2113	1409	10 15/64	32 21/64	9 27/32	13 25/32	10 59/64	6 57/64 x 15/64	499
CYVH 92	3 5/8	2293	1529	10 5/8	33 47/64	10 23/64	14 9/16	11 9/32	7 9/32 x 5/16	555
CYVH 96	3 3/4	2495	1664	11 1/32	35 3/64	10 45/64	14 61/64	11 7/8	7 31/64 x 5/16	625
CYVH 100	3 15/16	2698	1798	11 39/64	36 27/64	11 7/32	15 23/64	12 7/32	7 7/8 x 5/16	703
CYVH 104	4 1/8	2923	1948	12	37 23/32	11 17/32	16 9/64	12 23/32	8 5/64 x 5/16	802
CYVH 108	4 1/4	3147	2098	12 13/32	39 9/64	11 57/64	16 9/64	13 5/16	8 17/64 x 5/16	875
CYVH 112	4 7/16	3417	2278	12 51/64	40 33/64	12 13/32	16 59/64	13 43/64	8 21/32 x 5/16	957
CYVH 116	4 9/16	3631	2420	13 25/64	41 13/16	12 61/64	17 23/32	14 13/32	9 1/16 x 5/16	1091
CYVH 120	4 3/4	3912	2608	13 25/32	43 5/16	13 15/32	18 1/2	14 49/64	9 29/64 x 5/16	1190
CYVH 124	4 7/8	4148	2765	14 11/64	44 39/64	13 25/32	19 19/64	15 5/16	9 41/64 x 5/16	1331
CYVH 128	5	4451	2967	14 9/16	45 29/32	14 19/64	20 5/64	15 11/16	10 3/64 x 5/16	1436
CYVH 132	5 3/16	4699	3132	14 61/64	47 13/64	14 39/64	20 5/64	15 29/32	10 15/64 x 5/16	1518
CYVH 136	5 3/8	4991	3327	15 23/64	48 1/2	15 1/8	20 55/64	16 3/16	10 5/8 x 5/16	1633
CYVH 140	5 1/2	5283	3522	16 9/64	50	15 43/64	21 21/32	16 15/16	11 1/32 x 25/64	1882
CYVH 144	5 11/16	5587	3724	16 17/32	51 19/64	15 63/64	22 3/64	17 3/32	11 7/32 x 25/64	2014
CYVH 148	5 13/16	5901	3934	16 59/64	52 19/32	16 19/64	22 7/16	17 43/64	11 27/64 x 25/64	2177
CYVH 152	6	6227	4151	17 33/64	53 57/64	16 13/16	23 15/64	18 1/32	11 13/16 x 25/64	2377
CYVH 156	6 1/8	6553	4369	17 29/32	55 13/64	17 23/64	24 1/64	18 25/32	12 13/64 x 25/64	2561

- 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.



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	H (in)	Mass (lb)
CYCH 12	1/2	43	28	1 37/64	9 49/64	3
CYCH 16	5/8	72	48	2 11/64	12 19/32	7
CYCH 20	13/16	110	73	2 9/16	15 7/16	13
CYCH 24	15/16	157	105	2 61/64	18 45/64	21
CYCH 28	1 1/8	218	145	3 35/64	21 7/64	33
CYCH 32	1 1/4	289	193	3 15/16	24 1/4	46
CYCH 36	1 7/16	363	242	4 21/64	27 13/32	64
CYCH 40	1 9/16	440	293	4 23/32	29 51/64	85
CYCH 44	1 3/4	528	352	5 1/8	34 11/64	111
CYCH 48	1 7/8	622	414	5 45/64	36 27/32	154
CYCH 52	2	742	495	6 7/64	39 29/64	188
CYCH 56	2 3/16	877	585	6 1/2	43 5/64	233
CYCH 60	2 3/8	989	659	7 3/32	45 3/4	298
CYCH 64	2 1/2	1124	749	7 31/64	48 11/32	352
CYCH 68	2 11/16	1248	832	7 7/8	51 27/64	411
CYCH 72	2 13/16	1405	937	8 17/64	54 51/64	484
CYCH 76	3	1574	1049	8 55/64	57 13/32	584
CYCH 80	3 1/8	1731	1154	9 1/4	60 5/8	673
CYCH 84	3 5/16	1911	1274	9 41/64	64 51/64	797
CYCH 88	3 7/16	2113	1409	10 15/64	67 51/64	938
CYCH 92	3 5/8	2293	1529	10 5/8	71 27/64	1060
CYCH 96	3 3/4	2495	1664	11 1/32	74 1/64	1180
CYCH 100	3 15/16	2698	1798	11 39/64	76 49/64	1366
CYCH 104	4 1/8	2923	1948	12	79 3/8	1512
CYCH 108	4 1/4	3147	2098	12 13/32	82 13/64	1668
CYCH 112	4 7/16	3417	2278	12 51/64	84 61/64	1832
CYCH 116	4 9/16	3631	2420	13 25/64	87 9/16	2068
CYCH 120	4 3/4	3912	2608	13 25/32	90 35/64	2268
CYCH 124	4 7/8	4148	2765	14 11/64	93 15/16	2488
CYCH 128	5	4451	2967	14 9/16	96 17/32	2697
CYCH 132	5 3/16	4699	3132	14 61/64	99 9/64	2920
CYCH 136	5 3/8	4991	3327	15 23/64	101 47/64	3152
CYCH 140	5 1/2	5283	3522	16 9/64	104 59/64	3613
CYCH 144	5 11/16	5587	3724	16 17/32	107 33/64	3890
CYCH 148	5 13/16	5901	3934	16 59/64	110 1/8	4173
CYCH 152	6	6227	4151	17 33/64	112 23/32	4579
CYCH 156	6 1/8	6553	4369	17 29/32	115 5/16	4893

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

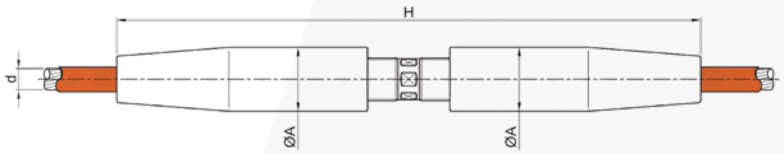
D_{HOLE} Hole Diameter

(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} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	ØA (in)	H (in)	Adj. (in)	Mass (lb)
CYAH 12	1/2	43	28	1 37/64	14 3/32	± 1 3/16	4
CYAH 16	5/8	72	48	2 11/64	17 41/64	± 1 37/64	10
CYAH 20	13/16	110	73	2 9/16	21 37/64	± 1 31/32	18
CYAH 24	15/16	157	105	2 61/64	26 11/16	± 2 9/16	31
CYAH 28	1 1/8	218	145	3 35/64	30 3/64	± 2 61/64	47
CYAH 32	1 1/4	289	193	3 15/16	35 3/64	± 3 35/64	67
CYAH 36	1 7/16	363	242	4 21/64	39 29/64	± 3 15/16	93
CYAH 40	1 9/16	440	293	4 23/32	42 21/64	± 4 21/64	119
CYAH 44	1 3/4	528	352	5 1/8	48 7/64	± 4 23/32	154
CYAH 48	1 7/8	622	414	5 45/64	52 7/16	± 5 1/8	219
CYAH 52	2	742	495	6 7/64	56 11/16	± 5 33/64	262
CYAH 56	2 3/16	877	585	6 1/2	60 25/32	± 5 29/32	323
CYAH 60	2 3/8	989	659	7 3/32	63 15/16	± 6 19/64	414
CYAH 64	2 1/2	1124	749	7 31/64	69 3/8	± 7 3/32	501
CYAH 68	2 11/16	1248	832	7 7/8	74 31/64	± 7 7/8	593
CYAH 72	2 13/16	1405	937	8 17/64	78 11/32	± 7 7/8	682
CYAH 76	3	1574	1049	8 55/64	81 27/64	± 7 7/8	821
CYAH 80	3 1/8	1731	1154	9 1/4	85 1/8	± 7 7/8	933
CYAH 84	3 5/16	1911	1274	9 41/64	88 37/64	± 7 7/8	1070
CYAH 88	3 7/16	2113	1409	10 15/64	91 21/32	± 7 7/8	1252
CYAH 92	3 5/8	2293	1529	10 5/8	96 11/16	± 7 7/8	1411
CYAH 96	3 3/4	2495	1664	11 1/32	99 49/64	± 7 7/8	1565
CYAH 100	3 15/16	2698	1798	11 39/64	102 19/32	± 7 7/8	1797
CYAH 104	4 1/8	2923	1948	12	105 43/64	± 7 7/8	1983
CYAH 108	4 1/4	3147	2098	12 13/32	108 37/64	± 7 7/8	2167
CYAH 112	4 7/16	3417	2278	12 51/64	111 1/32	± 7 7/8	2358
CYAH 116	4 9/16	3631	2420	13 25/64	113 5/16	± 7 7/8	2640
CYAH 120	4 3/4	3912	2608	13 25/32	115 63/64	± 7 7/8	2865
CYAH 124	4 7/8	4148	2765	14 11/64	119 29/64	± 7 7/8	3120
CYAH 128	5	4451	2967	14 9/16	122 1/8	± 8 17/64	3372
CYAH 132	5 3/16	4699	3132	14 61/64	124 21/64	± 8 17/64	3618
CYAH 136	5 3/8	4991	3327	15 23/64	126 29/64	± 8 17/64	3878
CYAH 140	5 1/2	5283	3522	16 9/64	129 21/64	± 8 17/64	4374
CYAH 144	5 11/16	5587	3724	16 17/32	131 29/64	± 8 17/64	4670
CYAH 148	5 13/16	5901	3934	16 59/64	132 51/64	± 8 17/64	5021
CYAH 152	6	6227	4151	17 33/64	135 5/16	± 8 17/64	5522
CYAH 156	6 1/8	6553	4369	17 29/32	137 53/64	± 8 17/64	5911

d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

D_{HOLE} Hole Diameter

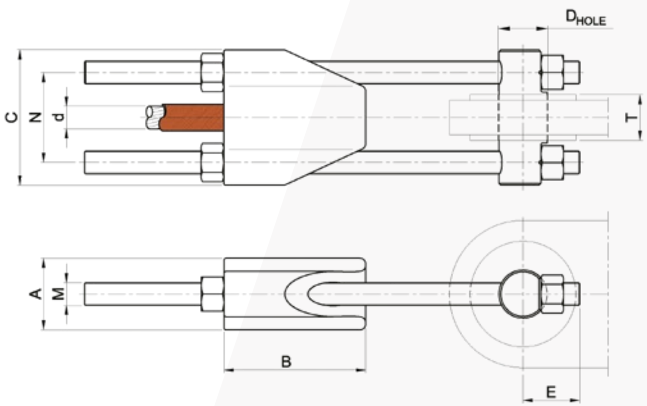
Adj. Adjustment

(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.

BRCH



PRODUCT CODE	d_{max} (in)	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	A (in)	B (in)	C (in)	D_{HOLE} (in)	E (in)	M (in)	N (in)	T_{min} (in)	T_{max} (in)	Adj. (in)	Mass (lb)
BRCH 12	1/2	36	24	1 37/64	3 15/64	3 5/32	1 17/64	1 29/64	5/8 x 5/64	2 13/64	5/8	55/64	±5 29/32	8
BRCH 16	5/8	63	42	2 11/64	4 11/64	4 3/32	1 1/2	1 49/64	25/32 x 1/8	2 53/64	15/16	1 3/16	±5 29/32	16
BRCH 20	13/16	99	66	2 9/16	5 5/32	4 61/64	1 27/32	2 11/64	15/16 x 1/8	3 25/64	1 3/16	1 29/64	±5 29/32	26
BRCH 24	15/16	139	93	3 5/32	6 17/64	5 29/32	2 13/64	2 9/16	1 1/16 x 1/8	4 1/64	1 1/2	1 49/64	±5 29/32	41
BRCH 28	1 1/8	191	127	3 35/64	7 1/8	6 27/32	2 19/32	3 5/64	1 19/64 x 5/32	4 41/64	1 31/32	2 13/64	±5 29/32	63
BRCH 32	1 1/4	259	172	4 9/64	8 5/32	7 51/64	2 53/64	3 11/32	1 27/64 x 1/8	5 9/32	2 11/64	2 23/64	±7 7/8	91
BRCH 36	1 7/16	315	210	4 23/32	9 1/64	8 21/32	3 5/32	3 45/64	1 17/32 x 1/8	5 53/64	2 9/16	2 3/4	±7 7/8	117
BRCH 40	1 9/16	393	262	5 1/8	10 5/64	9 17/32	3 37/64	4 3/32	1 21/32 x 1/8	6 3/8	2 3/4	2 61/64	±7 7/8	165
BRCH 44	1 3/4	472	315	5 33/64	11 9/64	10 35/64	3 13/16	4 31/64	1 57/64 x 1/8	7 3/32	3 5/32	3 11/32	±7 7/8	217
BRCH 48	1 7/8	562	375	5 29/32	12 3/64	11 1/2	4 7/32	4 59/64	2 3/64 x 1/8	7 23/32	3 35/64	3 47/64	±7 7/8	267
BRCH 52	2	663	442	6 11/16	12 29/32	12 7/16	4 39/64	5 23/64	2 13/64 x 5/32	8 11/32	3 47/64	4 9/64	±7 7/8	326
BRCH 56	2 3/16	764	510	7 3/32	13 57/64	13 5/16	4 51/64	5 43/64	2 23/64 x 5/32	8 57/64	4 9/64	4 21/64	±7 7/8	385
BRCH 60	2 3/8	877	585	7 31/64	14 51/64	14 3/32	5 5/32	5 29/32	2 23/64 x 5/32	9 3/8	4 17/32	4 23/32	±7 7/8	428
BRCH 64	2 1/2	1012	674	7 7/8	15 43/64	15 1/8	5 35/64	6 1/2	2 43/64 x 5/32	10 5/64	4 59/64	5 1/8	±9 27/32	534
BRCH 68	2 11/16	1124	749	8 21/32	16 49/64	16 1/16	5 15/16	6 59/64	2 53/64 x 5/32	10 45/64	5 1/8	5 5/16	±9 27/32	638
BRCH 72	2 13/16	1259	839	9 1/16	17 41/64	17 3/32	6 3/16	7 1/4	2 63/64 x 5/32	11 27/64	5 33/64	5 45/64	±9 27/32	731
BRCH 76	3	1416	944	9 29/64	18 1/2	17 61/64	6 47/64	7 51/64	3 5/32 x 5/32	11 31/32	5 29/32	6 7/64	±9 27/32	843
BRCH 80	3 1/8	1574	1049	9 27/32	19 31/64	18 57/64	7 11/64	8 17/64	3 11/32 x 5/32	12 19/32	6 7/64	6 1/2	±9 27/32	1155
BRCH 84	3 5/16	1731	1154	10 5/8	20 23/64	19 27/32	7 33/64	8 45/64	3 35/64 x 15/64	13 15/64	6 1/2	6 11/16	±9 27/32	1304
BRCH 88	3 7/16	1911	1274	11 1/32	21 7/32	20 55/64	7 61/64	9 11/64	3 47/64 x 15/64	13 15/16	6 57/64	7 3/32	±9 27/32	1481
BRCH 92	3 5/8	2091	1394	11 27/64	22 13/64	22 3/64	8 11/32	9 7/8	4 9/64 x 15/64	14 51/64	7 9/32	7 31/64	±9 27/32	1762
BRCH 96	3 3/4	2271	1514	11 13/16	23 5/64	22 63/64	8 47/64	10 23/64	4 21/64 x 15/64	15 7/16	7 31/64	7 7/8	±9 27/32	1968
BRCH 100	3 15/16	2450	1634	12 13/64	24 1/64	23 15/16	9 9/64	10 25/32	4 17/32 x 15/64	16 1/16	7 43/64	8 5/64	±11 13/16	2192
BRCH 104	4 1/8	2653	1768	12 63/64	24 7/8	24 7/8	9 17/32	11 17/64	4 23/32 x 15/64	16 11/16	8 5/64	8 15/32	±11 13/16	2454
BRCH 108	4 1/4	2855	1903	13 25/64	25 55/64	25 43/64	9 59/64	11 17/32	4 23/32 x 15/64	17 11/64	8 17/64	8 55/64	±11 13/16	2605
BRCH 112	4 7/16	3125	2083	13 25/32	26 13/16	26 27/32	10 45/64	12 31/64	5 1/8 x 15/64	18 1/32	8 15/32	9 1/16	±11 13/16	3034
BRCH 116	4 9/16	3350	2233	14 11/64	27 43/64	27 41/64	11 7/64	12 3/4	5 1/8 x 15/64	18 1/2	8 55/64	9 29/64	±11 13/16	3205
BRCH 120	4 3/4	3574	2383	14 61/64	28 47/64	28 37/64	11 1/2	13 15/64	5 5/16 x 15/64	19 9/64	9 1/16	9 27/32	±11 13/16	3553
BRCH 124	4 7/8	3822	2548	15 23/64	29 39/64	29 17/32	11 59/64	13 45/64	5 33/64 x 15/64	19 49/64	9 29/64	10 3/64	±11 13/16	3872
BRCH 128	5	4069	2713	15 3/4	30 15/32	30 15/32	12 21/64	14 11/64	5 45/64 x 15/64	20 25/64	9 27/32	10 7/16	±11 13/16	4209
BRCH 132	5 3/16	4316	2878	16 9/64	31 11/32	31 1/2	12 23/32	14 41/64	5 29/32 x 15/64	21 7/64	10 3/64	10 5/8	±11 13/16	4572
BRCH 136	5 3/8	4586	3057	16 59/64	32 13/64	32 43/64	13 7/64	15 5/16	6 19/64 x 15/64	21 31/32	10 7/16	11 1/32	±11 13/16	5140
BRCH 140	5 1/2	4856	3237	17 21/64	33 5/64	33 25/32	13 1/2	15 63/64	6 11/16 x 15/64	22 3/4	10 5/8	11 27/64	±11 13/16	5694
BRCH 144	5 11/16	5148	3432	17 23/32	33 15/16	35 3/64	13 57/64	16 21/32	7 3/32 x 15/64	23 45/64	11 1/32	11 13/16	±11 13/16	6298
BRCH 148	5 13/16	5463	3642	18 7/64	34 51/64	35 63/64	14 19/64	17 1/8	7 9/32 x 15/64	24 21/64	11 27/64	12 13/64	±11 13/16	6749
BRCH 152	6	5755	3837	18 57/64	35 43/64	36 59/64	14 11/16	17 9/16	7 31/64 x 15/64	24 61/64	11 13/16	12 19/32	±11 13/16	7278
BRCH 156	6 1/8	6047	4032	19 19/64	36 17/32	37 7/8	15 5/64	18 1/32	7 43/64 x 15/64	25 19/32	12 13/64	12 63/64	±11 13/16	7772

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.

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. 2755psi	Min. 1000 h

HDPE relevant properties:

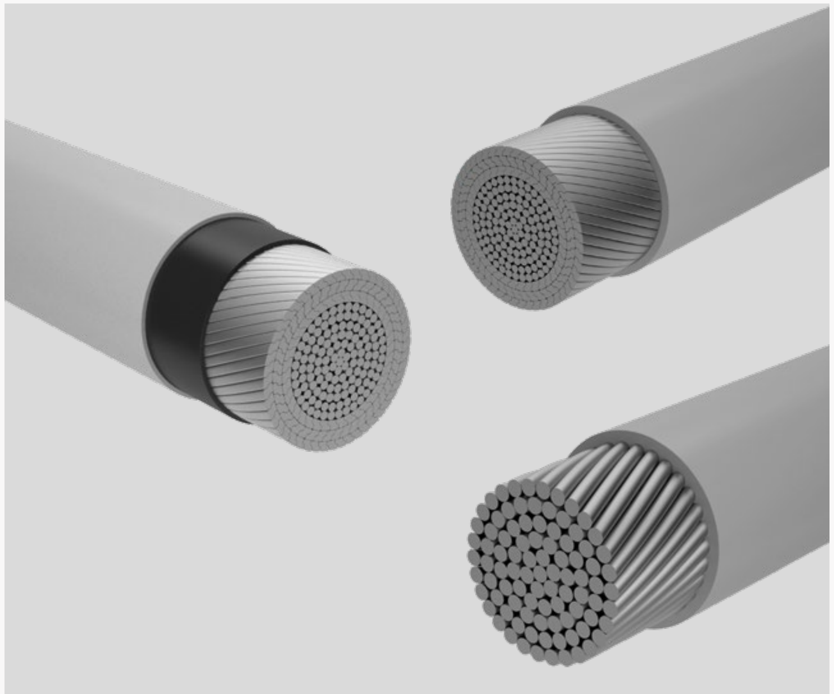
- Very low maintenance needed during the cable lifetime.
- UV stability against solar radiation.
- Weathering resistance.
- Full spectrum of outer layer final RAL colours.
- Typical HDPE wall thickness is 10% of the internal strand diameter.
- Cables are capable of being coiled on a diameter of 30 times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

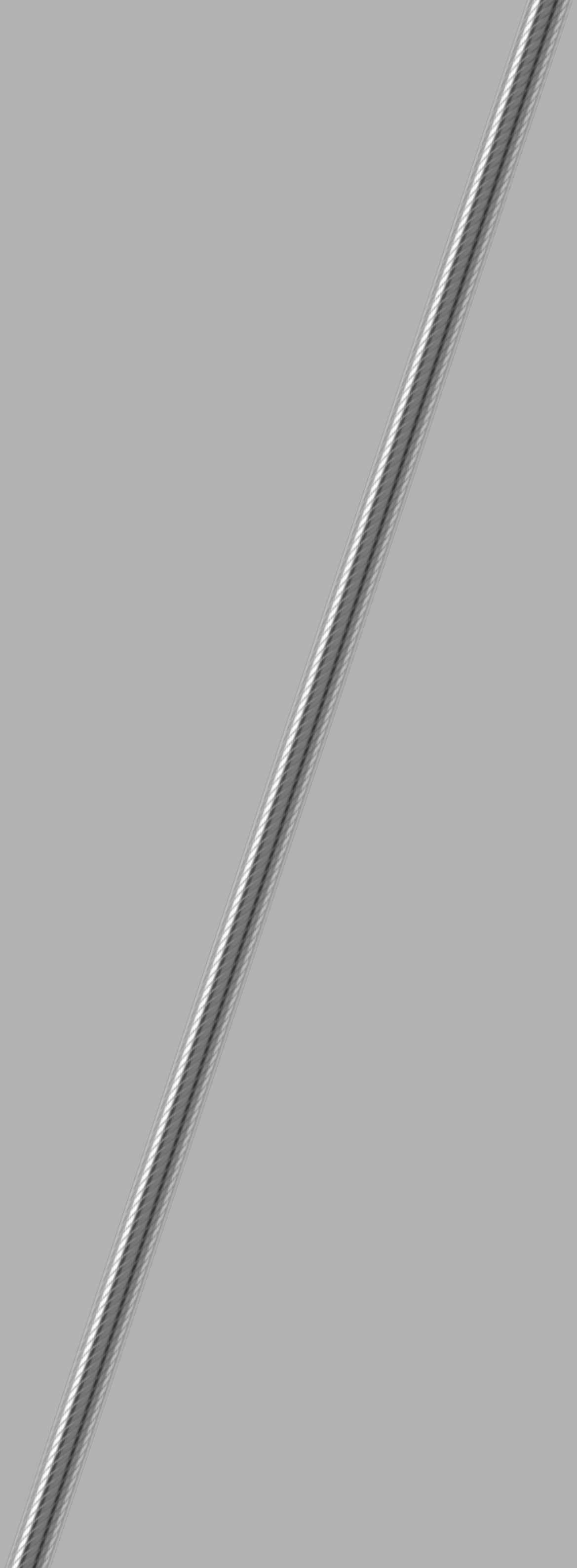
- Connection between HDPE cover, cable and socket is secured from risk of water ingress.
- There is a mechanical locking mechanism on to the cable, ensuring firm fixing of the HDPE.
- No significant change from the original socket's geometry and primary steel connection dimensions.

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

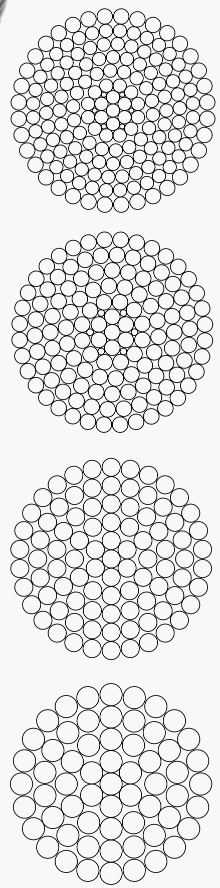
STAINLESS STEEL CABLE SYSTEM

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/mm^2. 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 (in)	F_{uk} (1) (kip)	F_{Rd} (2) (kip)	A (in²)	EA (kip)	Mass (lb/ft)
OSX 8	5/16	12	8	0,1	1146	0,2
OSX 10	3/8	19	13	0,1	1791	0,3
OSX 12	1/2	27	18	0,1	2579	0,5
OSX 14	9/16	37	25	0,2	3510	0,7
OSX 16	5/8	49	33	0,2	4585	0,9
OSX 18	11/16	63	42	0,3	5803	1,1
OSX 20	13/16	78	52	0,4	7164	1,4
OSX 22	7/8	93	62	0,5	8669	1,7
OSX 24	15/16	111	74	0,5	10316	2,0
OSX 26	1	132	88	0,6	12108	2,3
OSX 28	1 1/8	152	101	0,7	14042	2,7
OSX 30	1 3/16	174	116	0,9	16119	3,1
OSX 32	1 1/4	199	133	1,0	18340	3,5
OSX 34	1 5/16	225	150	1,1	20705	4,0
OSX 36	1 7/16	252	168	1,2	23212	4,5
OSX 38	1 1/2	281	187	1,4	25863	5,0
OSX 40	1 9/16	311	208	1,5	28657	5,5
OSX 44	1 3/4	377	251	1,8	34675	6,7
OSX 48	1 7/8	434	289	2,2	41266	8,0
OSX 52	2	507	338	2,6	48430	9,3
OSX 56	2 3/16	586	390	3,0	56167	10,8
OSX 60	2 3/8	670	447	3,4	64478	12,4
OSX 64	2 1/2	761	507	3,9	73362	14,1
OSX 68	2 11/16	857	571	4,4	82818	16,0
OSX 72	2 13/16	959	639	4,9	92848	17,9
OSX 76	3	1067	711	5,5	103451	19,9
OSX 80	3 1/8	1180	787	6,1	114627	22,1

d — Nominal Diameter

F_{uk} — Characteristic Breaking Strength

F_{Rd} — Design Resistance

A — Metallic Cross Section

EA — Elastic Stiffness

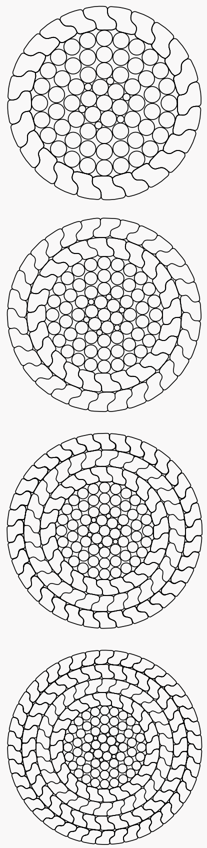
(1) Characteristic Breaking Strength F_{uk} = Minimum Breaking Force F_{min} x Loss Factor ke (ke = 1) where ke = 1 for metal/resin filled socket, ke = 0.9 for swaged socket

(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.

FLX



PRODUCT CODE	d (in)	F_{uk} (1) (kip)	F_{Rd} (2) (kip)	A (in^2)	EA (kip)	Mass (lb/ft)
FLX 14	9/16	40	27	0,2	3809	0,7
FLX 16	5/8	53	35	0,3	4975	1,0
FLX 18	11/16	66	44	0,3	6297	1,2
FLX 20	13/16	82	55	0,4	7774	1,5
FLX 22	7/8	100	67	0,5	9406	1,8
FLX 24	15/16	119	79	0,6	11194	2,2
FLX 26	1	139	93	0,7	13138	2,6
FLX 28	1 1/8	162	108	0,8	15236	3,0
FLX 30	1 3/16	185	124	0,9	17491	3,4
FLX 32	1 1/4	211	141	1,1	19901	3,9
FLX 34	1 5/16	239	160	1,2	22466	4,4
FLX 36	1 7/16	268	178	1,3	25187	4,9
FLX 38	1 1/2	299	199	1,5	28063	5,5
FLX 40	1 9/16	326	217	1,7	31469	6,1
FLX 44	1 3/4	392	262	2,0	38078	7,4
FLX 48	1 7/8	464	309	2,4	45316	8,8
FLX 52	2	540	360	2,9	53816	10,5
FLX 56	2 3/16	622	414	3,3	62414	12,1
FLX 60	2 3/8	709	473	3,8	71649	13,9
FLX 64	2 1/2	803	535	4,3	81521	15,9
FLX 68	2 11/16	903	602	4,9	92029	17,9
FLX 72	2 13/16	1008	672	5,5	103175	20,1
FLX 76	3	1120	746	6,1	114957	22,4
FLX 80	3 1/8	1238	825	6,8	127376	24,8

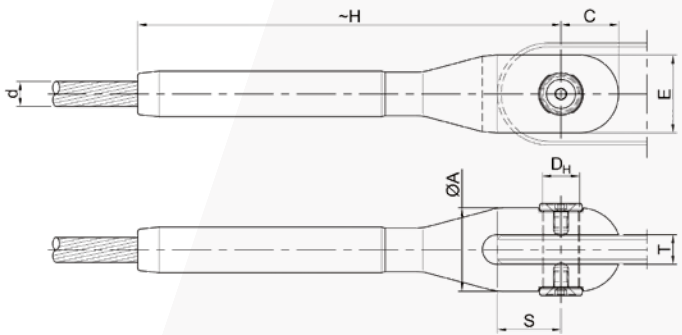
d	Nominal Diameter
F_{uk}	Characteristic Breaking Strength
F_{Rd}	Design Resistance
A	Metallic Cross Section
EA	Elastic Stiffness

(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.

OPEN SWAGED SOCKET
X2CrNiMoN22-5-3

MAC

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	DH (in)	S (in)	T (in)	Mass (lb)
MAC 6	7	4	1/4	1 1/32	4 9/64	11/16	15/16	7/16	21/32	5/16	0,5
MAC 8	12	7	5/16	1 19/64	5 15/32	7/8	1 13/64	35/64	55/64	25/64	0,9
MAC 10	19	11	3/8	1 29/64	6 17/32	63/64	1 11/32	5/8	63/64	15/32	1,5
MAC 12	27	16	1/2	1 49/64	7 7/8	1 3/16	1 41/64	3/4	1 5/32	19/32	2,9
MAC 14	37	22	9/16	1 59/64	9 1/16	1 5/16	1 13/16	53/64	1 23/64	19/32	3,5
MAC 16	49	30	5/8	2 9/32	10 7/16	1 9/16	2 9/64	63/64	1 19/32	45/64	6,1
MAC 18	63	38	11/16	2 9/16	11 11/16	1 47/64	2 3/8	1 7/64	1 47/64	55/64	7,3
MAC 20	78	47	13/16	2 51/64	12 63/64	1 59/64	2 5/8	1 7/32	1 63/64	55/64	10
MAC 22	93	56	7/8	3 5/64	14 1/4	2 7/64	2 7/8	1 11/32	2 11/64	63/64	14
MAC 24	111	67	15/16	3 15/64	15 15/32	2 15/64	3 3/64	1 27/64	2 23/64	63/64	16
MAC 26	132	79	1	3 25/64	16 21/32	2 23/64	3 7/32	1 1/2	2 19/32	63/64	21
MAC 28	152	91	1 1/8	3 45/64	17 29/32	2 35/64	3 31/64	1 39/64	2 45/64	1 3/16	27
MAC 30	174	105	1 3/16	3 15/16	19 7/32	2 47/64	3 47/64	1 47/64	2 61/64	1 3/16	31
MAC 32	199	119	1 1/4	4 11/64	20 7/16	2 29/32	3 61/64	1 27/32	3 1/8	1 17/64	39
MAC 34	225	135	1 5/16	4 31/64	21 13/16	3 7/64	4 1/4	1 31/32	3 5/16	1 3/8	46
MAC 36	252	151	1 7/16	4 11/16	22 61/64	3 15/64	4 27/64	2 3/64	3 15/32	1 29/64	54
MAC 38	281	169	1 1/2	4 59/64	24 11/64	3 3/8	4 41/64	2 1/8	3 37/64	1 37/64	58
MAC 40	311	187	1 9/16	5 5/32	25 15/32	3 9/16	4 57/64	2 1/4	3 27/32	1 37/64	72
MAC 42	344	206	1 5/8	5 23/64	26 39/64	3 11/16	5 1/16	2 21/64	4	1 21/32	84



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 $F_{Rd} = (F_{uk} / 1.5) / Y_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $Y_R = 1.0$

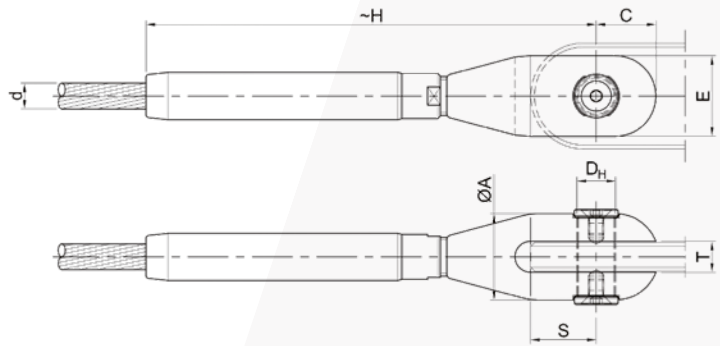
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

STAINLESS STEEL

ADJUSTABLE OPEN SWAGED SOCKET
X2CrNiMoN22-5-3

MAC-R

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	DH (in)	S (in)	T (in)	Adj. (in)	Mass (lb)
MAC-R 6	7	4	1/4	1 1/32	4 31/64	11/16	15/16	7/16	21/32	5/16	1/8	0,5
MAC-R 8	12	7	5/16	1 19/64	5 15/16	7/8	1 13/64	35/64	55/64	25/64	5/32	1,0
MAC-R 10	19	11	3/8	1 29/64	7 1/8	63/64	1 11/32	5/8	63/64	15/32	13/64	1,7
MAC-R 12	27	16	1/2	1 49/64	8 37/64	1 3/16	1 41/64	3/4	1 5/32	19/32	15/64	3,2
MAC-R 14	37	22	9/16	1 59/64	9 7/8	1 5/16	1 13/16	53/64	1 23/64	19/32	9/32	4,0
MAC-R 16	49	30	5/8	2 9/32	11 3/8	1 9/16	2 9/64	63/64	1 19/32	45/64	5/16	6,7
MAC-R 18	63	38	11/16	2 9/16	12 3/4	1 47/64	2 3/8	1 7/64	1 47/64	55/64	23/64	8,1
MAC-R 20	78	47	13/16	2 51/64	14 11/64	1 59/64	2 5/8	1 7/32	1 63/64	55/64	25/64	11
MAC-R 22	93	56	7/8	3 5/64	15 35/64	2 7/64	2 7/8	1 11/32	2 11/64	63/64	7/16	15
MAC-R 24	111	67	15/16	3 15/64	16 57/64	2 15/64	3 3/64	1 27/64	2 23/64	63/64	15/32	17
MAC-R 26	132	79	1	3 25/64	18 3/16	2 23/64	3 7/32	1 1/2	2 19/32	63/64	33/64	23
MAC-R 28	152	91	1 1/8	3 45/64	19 9/16	2 35/64	3 31/64	1 39/64	2 45/64	1 3/16	35/64	29
MAC-R 30	174	105	1 3/16	3 15/16	20 63/64	2 47/64	3 47/64	1 47/64	2 61/64	1 3/16	19/32	33
MAC-R 32	199	119	1 1/4	4 11/64	22 21/64	2 29/32	3 61/64	1 27/32	3 1/8	1 17/64	5/8	42
MAC-R 34	225	135	1 5/16	4 31/64	23 13/16	3 7/64	4 1/4	1 31/32	3 5/16	1 3/8	43/64	48
MAC-R 36	252	151	1 7/16	4 11/16	25 5/64	3 15/64	4 27/64	2 3/64	3 15/32	1 29/64	45/64	57
MAC-R 38	281	169	1 1/2	4 59/64	26 27/64	3 3/8	4 41/64	2 1/8	3 37/64	1 37/64	3/4	63
MAC-R 40	311	187	1 9/16	5 5/32	27 53/64	3 9/16	4 57/64	2 1/4	3 27/32	1 37/64	25/32	77
MAC-R 42	344	206	1 5/8	5 23/64	29 3/32	3 11/16	5 1/16	2 21/64	4	1 21/32	53/64	91



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

Adj. Adjustment

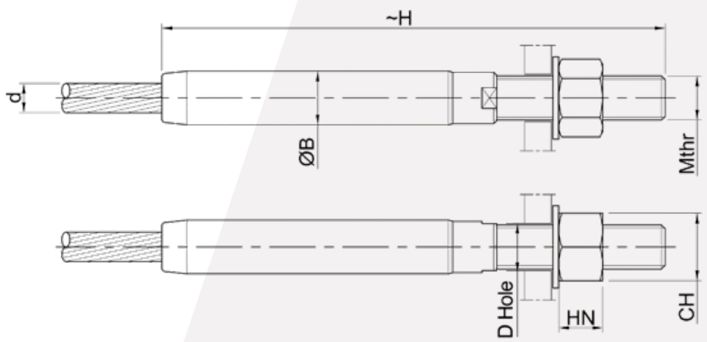
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

SWAGED FITTING
X2CrNiMoN22-5-3

FLT

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØB (in)	~H (in)	Mthr (in)	Pitch (in)	Lthr (in)	D Hole (in)	CH (in)	HN (in)	Mass (lb)
FLT 6	7	4	1/4	15/32	4 9/64	25/64	1/16	1 37/64	7/16	5/8	25/64	0,3
FLT 8	12	7	5/16	39/64	5 33/64	35/64	5/64	2 3/32	19/32	53/64	35/64	0,6
FLT 10	19	11	3/8	23/32	6 11/16	5/8	5/64	2 7/16	45/64	15/16	5/8	1,0
FLT 12	27	16	1/2	59/64	8 5/64	25/32	3/32	2 61/64	55/64	1 3/16	25/32	2,0
FLT 14	37	22	9/16	1 3/16	9 13/32	15/16	1/8	3 15/32	1 1/32	1 27/64	15/16	2,5
FLT 16	49	30	5/8	1 3/16	10 45/64	1 1/16	1/8	3 57/64	1 3/16	1 39/64	1 1/16	4,2
FLT 18	63	38	11/16	1 29/64	11 59/64	1 3/16	9/64	4 19/64	1 19/64	1 13/16	1 3/16	4,8
FLT 20	78	47	13/16	1 29/64	13 3/16	1 19/64	9/64	4 11/16	1 27/64	1 31/32	1 19/64	6,5
FLT 22	93	56	7/8	1 37/64	14 41/64	1 27/64	1/8	5 5/16	1 17/32	2 11/64	1 27/64	9,3
FLT 24	111	67	15/16	1 27/32	15 45/64	1 27/64	1/8	5 33/64	1 17/32	2 11/64	1 27/64	10
FLT 26	132	79	1	1 27/32	17 11/64	1 21/32	1/8	6 9/64	1 49/64	2 9/16	1 21/32	15
FLT 28	152	91	1 1/8	2 7/64	18 15/64	1 21/32	1/8	6 11/32	1 49/64	2 9/16	1 21/32	18
FLT 30	174	105	1 3/16	2 3/8	19 31/64	1 49/64	1/8	6 49/64	1 57/64	2 3/4	1 49/64	20
FLT 32	199	119	1 1/4	2 3/8	20 45/64	1 57/64	1/8	7 1/8	2	2 61/64	1 57/64	25
FLT 34	225	135	1 5/16	2 5/8	22 3/32	2 3/64	1/8	7 41/64	2 11/64	3 5/32	2 3/64	28
FLT 36	252	151	1 7/16	2 5/8	23 7/64	2 3/64	1/8	7 53/64	2 11/64	3 5/32	2 3/64	34
FLT 38	281	169	1 1/2	2 57/64	24 29/64	2 13/64	5/32	8 5/16	2 21/64	3 11/32	2 13/64	37
FLT 40	311	187	1 9/16	2 57/64	25 3/4	2 23/64	5/32	8 25/32	2 31/64	3 35/64	2 23/64	46
FLT 42	344	206	1 5/8	3 5/32	27 3/32	2 33/64	5/32	9 1/4	2 41/64	3 47/64	2 33/64	56



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: $\gamma_R = 1.0$

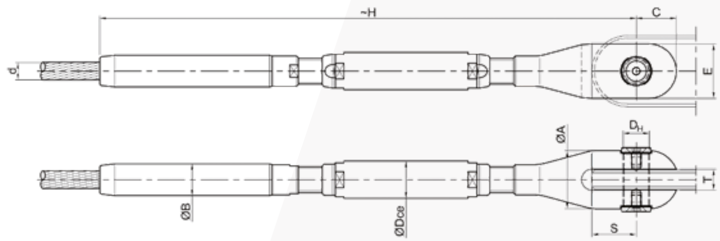
Upon request, we can suggest the effective diameter and the breaking strength of the cable for the specific project.

STAINLESS STEEL

TURNBUCKLE
X2CrNiMoN22-5-3

TBC

PRODUCT CODE	N_{uk} (1) (kip)	N_{Rd} (2) (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	E (in)	DH (in)	Dce (in)	B (in)	S (in)	T (in)	Adj. (in)	Mass (lb)
TBC 6	7	4	1/4	1 1/32	8 25/64	11/16	15/16	7/16	19/32	15/32	21/32	5/16	25/32	0,7
TBC 8	12	7	5/16	1 19/64	10 63/64	7/8	1 13/64	35/64	53/64	39/64	55/64	25/64	63/64	1,6
TBC 10	19	11	3/8	1 29/64	13 5/64	63/64	1 11/32	5/8	15/16	23/32	63/64	15/32	1 3/16	2,5
TBC 12	27	16	1/2	1 49/64	15 43/64	1 3/16	1 41/64	3/4	1 9/64	59/64	1 5/32	19/32	1 3/8	4,6
TBC 14	37	22	9/16	1 59/64	18 7/64	1 5/16	1 13/16	53/64	1 11/32	1 3/16	1 23/64	19/32	1 37/64	6,4
TBC 16	49	30	5/8	2 9/32	20 43/64	1 9/16	2 9/64	63/64	1 1/2	1 3/16	1 19/32	45/64	1 49/64	10
TBC 18	63	38	11/16	2 9/16	23 1/32	1 47/64	2 3/8	1 7/64	1 11/16	1 29/64	1 47/64	55/64	1 31/32	13
TBC 20	78	47	13/16	2 51/64	25 7/16	1 59/64	2 5/8	1 7/32	1 27/32	1 29/64	1 63/64	55/64	2 11/64	17
TBC 22	93	56	7/8	3 5/64	28 15/32	2 7/64	2 7/8	1 11/32	1 31/32	1 37/64	2 11/64	63/64	2 9/16	24
TBC 24	111	67	15/16	3 15/64	30 25/64	2 15/64	3 3/64	1 27/64	2 3/64	1 27/32	2 23/64	63/64	2 3/4	27
TBC 26	132	79	1	3 25/64	33 5/32	2 23/64	3 7/32	1 1/2	2 21/64	1 27/32	2 19/32	63/64	2 61/64	36
TBC 28	152	91	1 1/8	3 45/64	35 1/8	2 35/64	3 31/64	1 39/64	2 23/64	2 7/64	2 45/64	1 3/16	3 5/32	44
TBC 30	174	105	1 3/16	3 15/16	37 19/32	2 47/64	3 47/64	1 47/64	2 9/16	2 3/8	2 61/64	1 3/16	3 11/32	52
TBC 32	199	119	1 1/4	4 11/64	39 27/32	2 29/32	3 61/64	1 27/32	2 23/32	2 3/8	3 1/8	1 17/64	3 35/64	64
TBC 34	225	135	1 5/16	4 31/64	42 9/16	3 7/64	4 1/4	1 31/32	2 29/32	2 5/8	3 5/16	1 3/8	3 47/64	75
TBC 36	252	151	1 7/16	4 11/16	44 13/32	3 15/64	4 27/64	2 3/64	2 61/64	2 5/8	3 15/32	1 29/64	3 15/16	86
TBC 38	281	169	1 1/2	4 59/64	46 57/64	3 3/8	4 41/64	2 1/8	3 5/32	2 57/64	3 37/64	1 37/64	4 9/64	97
TBC 40	311	187	1 9/16	5 5/32	49 29/64	3 9/16	4 57/64	2 1/4	3 11/32	2 57/64	3 27/32	1 37/64	4 21/64	119
TBC 42	344	206	1 5/8	5 23/64	51 27/32	3 11/16	5 1/16	2 21/64	3 35/64	3 5/32	4	1 21/32	4 17/32	139



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

N_{Rd} Design Resistance

Adj. Adjustment

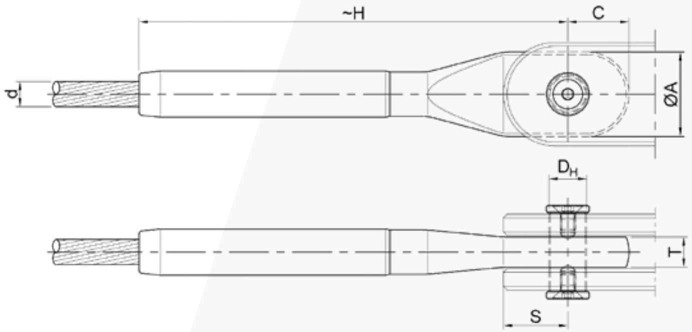
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

CLOSED SWAGED SOCKET
X2CrNiMoN22-5-3

MCC

PRODUCT CODE	N_{uk} [1] (kip)	N_{Rd} [2] (kip)	d_{max} (in)	ØA (in)	~H (in)	C (in)	DH (in)	S (in)	T (in)	Mass (lb)
MCC 6	7	4	1/4	1 1/32	4 9/64	47/64	7/16	21/32	5/16	0,3
MCC 8	12	7	5/16	1 19/64	5 15/32	59/64	35/64	55/64	25/64	0,6
MCC 10	19	11	3/8	1 29/64	6 17/32	1 3/64	5/8	63/64	35/64	1,0
MCC 12	27	16	1/2	1 49/64	7 7/8	1 17/64	3/4	1 5/32	5/8	1,9
MCC 14	37	22	9/16	1 59/64	9 1/16	1 3/8	53/64	1 23/64	3/4	3,1
MCC 16	49	30	5/8	2 9/32	10 7/16	1 41/64	63/64	1 19/32	55/64	4,1
MCC 18	63	38	11/16	2 9/16	11 11/16	1 53/64	1 7/64	1 47/64	1 1/32	6,5
MCC 20	78	47	13/16	2 51/64	12 63/64	2	1 7/32	1 63/64	1 7/64	7,5
MCC 22	93	56	7/8	3 5/64	14 1/4	2 13/64	1 11/32	2 11/64	1 3/16	9,7
MCC 24	111	67	15/16	3 15/64	15 15/32	2 21/64	1 27/64	2 23/64	1 1/2	13
MCC 26	132	79	1	3 25/64	16 21/32	2 7/16	1 1/2	2 19/32	1 21/32	14
MCC 28	152	91	1 1/8	3 45/64	17 29/32	2 21/32	1 39/64	2 45/64	1 47/64	20
MCC 30	174	105	1 3/16	3 15/16	19 7/32	2 53/64	1 47/64	2 61/64	1 13/16	26
MCC 32	199	119	1 1/4	4 11/64	20 7/16	3	1 27/32	3 1/8	2 3/64	28
MCC 34	225	135	1 5/16	4 31/64	21 13/16	3 15/64	1 31/32	3 5/16	2 1/8	37
MCC 36	252	151	1 7/16	4 11/16	22 61/64	3 23/64	2 3/64	3 15/32	2 13/64	40
MCC 38	281	169	1 1/2	4 59/64	24 11/64	3 17/32	2 1/8	3 37/64	2 13/64	50
MCC 40	311	187	1 9/16	5 5/32	25 15/32	3 45/64	2 1/4	3 27/32	2 9/32	54
MCC 42	344	206	1 5/8	5 23/64	26 39/64	3 27/32	2 21/64	4	2 7/16	65



d_{max} Max Strand Diameter

N_{uk} Characteristic Breaking Strength

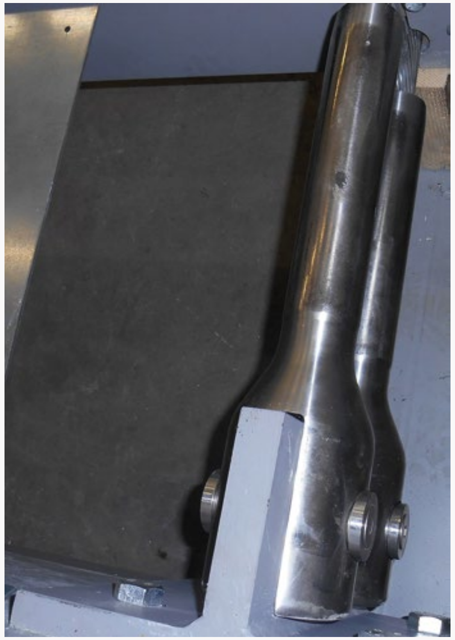
N_{Rd} Design Resistance

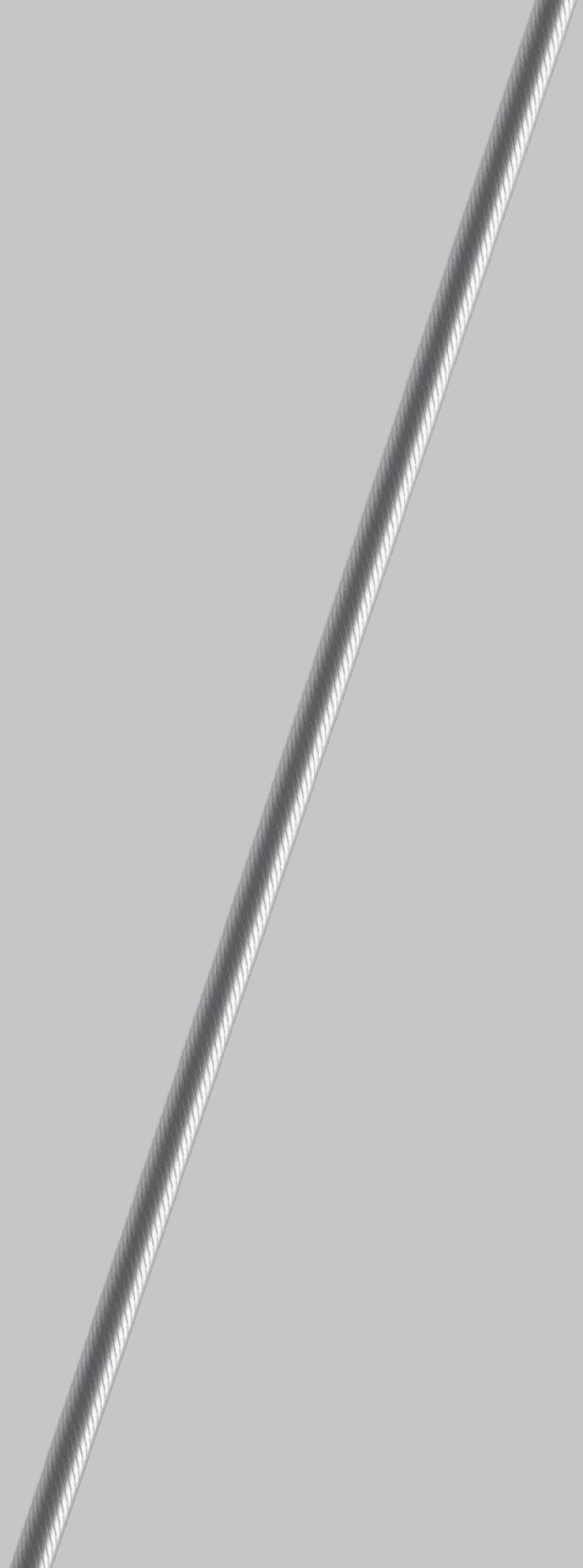
(1) Characteristic Breaking Strength $F_{uk} = N_{uk}$ (2) Design Resistance $F_{Rd} = (F_{uk} / 1.5) / \gamma_R$ $F_{Rd} = N_{Rd}$
For European Standard EN 1993-1-11: $\gamma_R = 1.0$

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

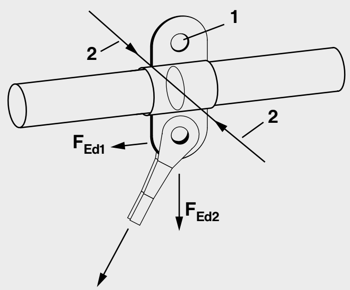
Correct assembly, installation and tensioning of cable assemblies on site is essential to ensure cables are installed safely, on time, within budget and to specification. Teufelberger-Redaelli aims to engage at the earliest possible stage of the project design process to ensure all that options and all 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.



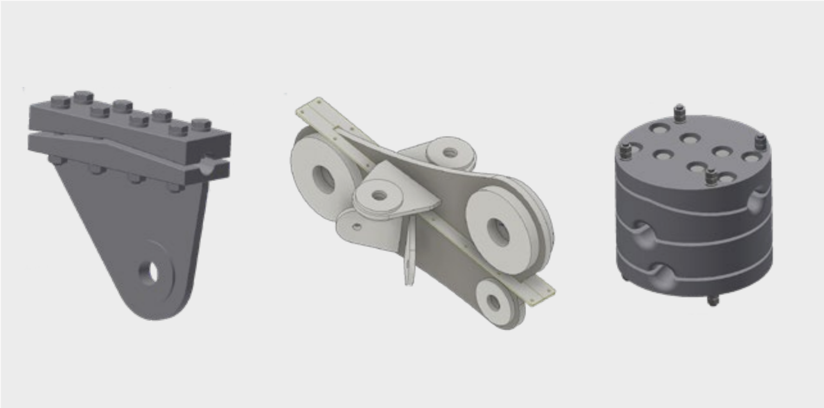
1 - Hole for preload bolts
2 - Preload F_r from preloaded bolts

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

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

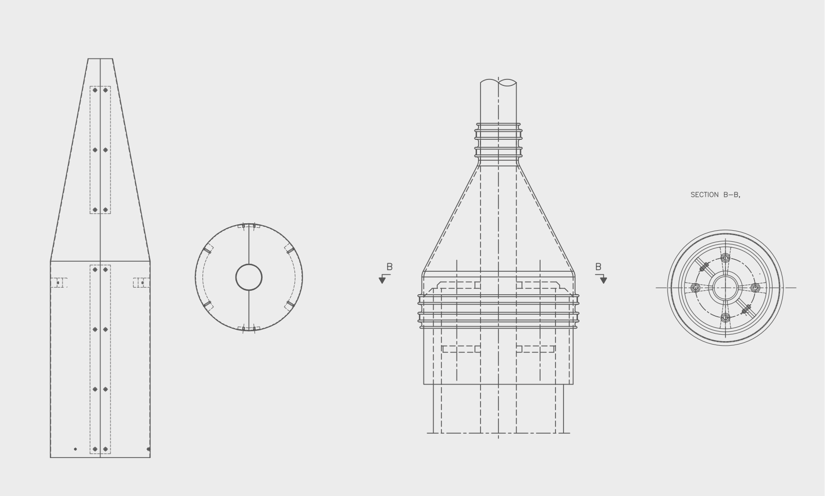
Depending on the application, clamps are either machined from solid steel sections or manufactured as customised cast steel pieces. Every clamp has its own unique friction coefficient value depending on the design and application of the structure. Thanks to Teufelberger-Redaelli's detailed knowledge 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.

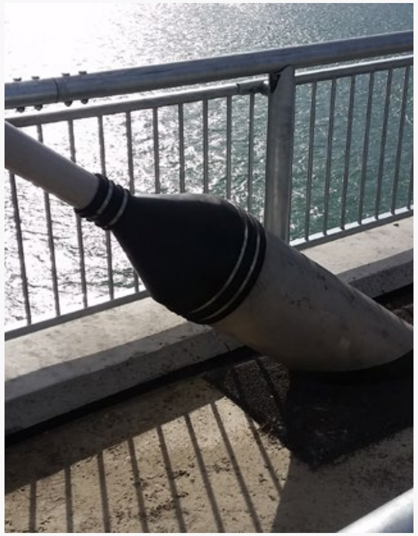


Particular attention is given to ensure all clamp types are designed to an optimum and adequate geometrical shape including rounded edges and with a specific bolt tensioning procedure. NDT tests can be performed on request.

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.

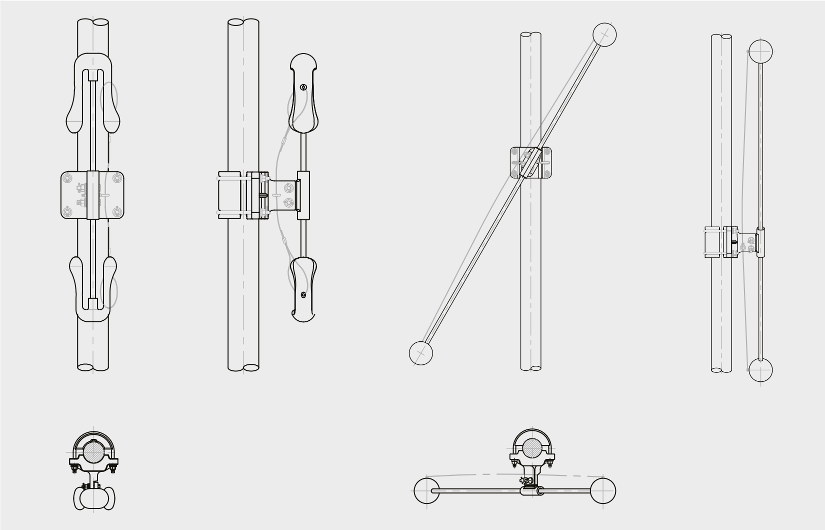
In general terms longer cables are more susceptible to vibrations, due to their larger wind exposure and lower damping values. Reference is made to EN 1993-1-11 for wind effects to be considered in design of structures with tension components.

HIGH FREQUENCY AND LOW FREQUENCY DAMPERS

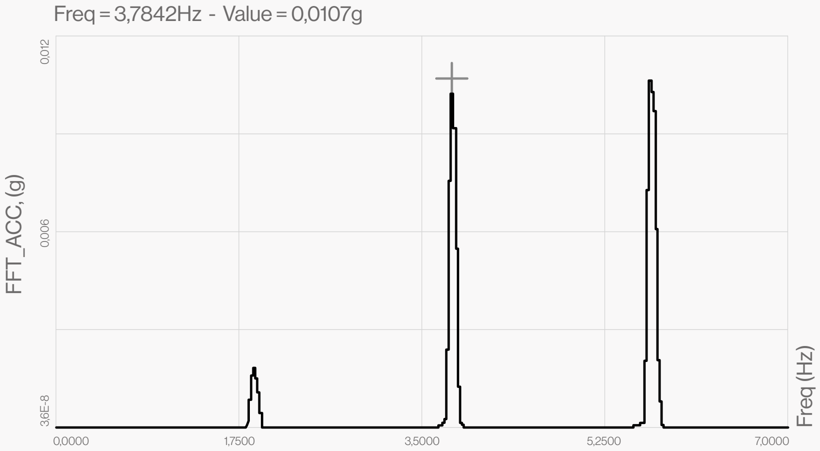
Teufelberger-Redaelli designed dampers can be applied on individual cables to increase the structural damping and help suppress excessive wind-induced vibrations. The cable system can be tested in a wind tunnel to investigate the risk of aerodynamic instability and determine the key parameters needed 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.

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

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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

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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
SWTRAMWAY 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 MIÑIO	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 LIGTHING 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

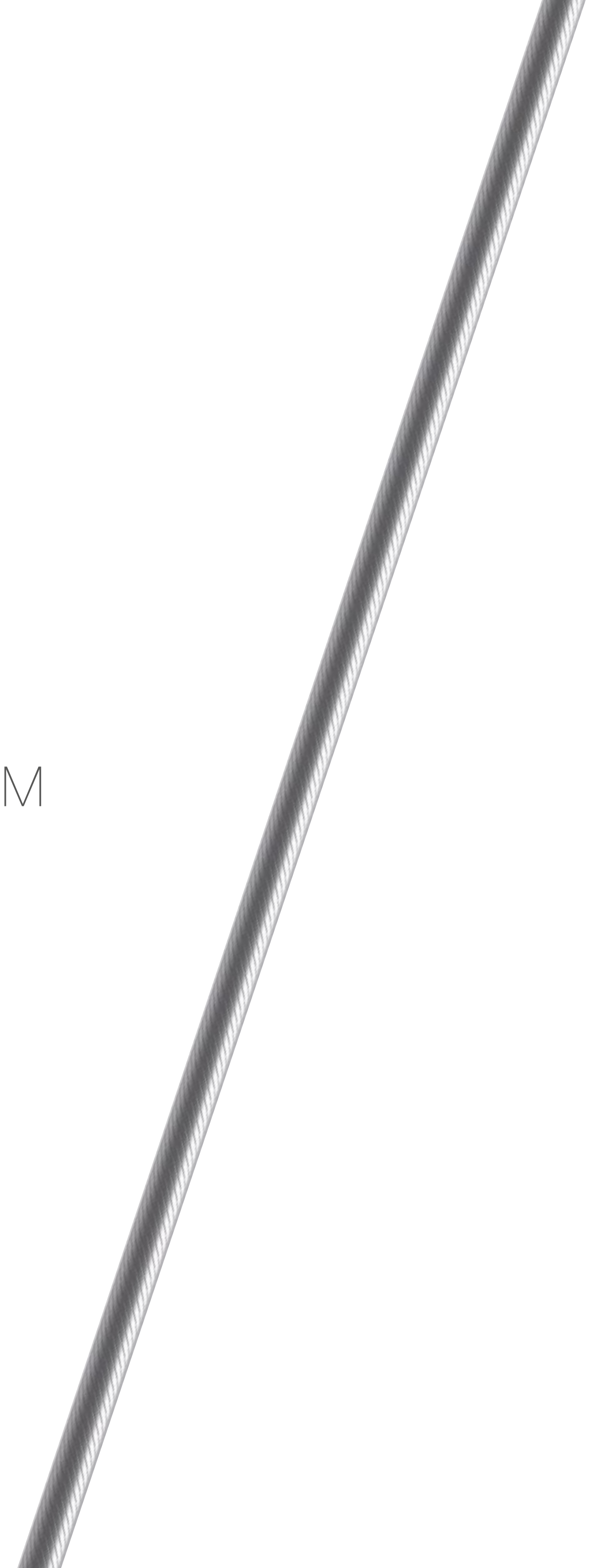
PROJECT	COUNTRY	SITE	CLIENT	PROJECT DATA	YEAR
ROME OLYMPIC STADIUM	ITA	ROME	IMAC	SPACE TENSOSTRUCTURE INSPECTION	1999
MALPENSA 2000 CARGO CITY STAYED ROOF	ITA	MALPENSA AIRPORT CARGO CITY	OFFICINE TOSONI	CABLE STAYED ROOF STAY CABLE SYSTEM	1999
STADIUM STAND ROOF	ITA	REGGIO CALABRIA	FERROCEMENTO CONDOTTE	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



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