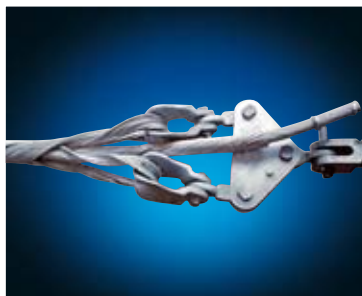
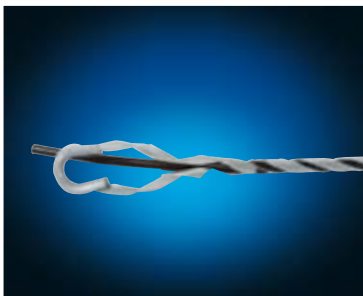




RIBE-OPTOFIT® – effective protection for optical fiber aerial cables

Optical fiber aerial cables are an established media for the transmission of information via overhead lines. The data is transmitted by means of modulated light pulses over optical fibers with a total diameter of approximately 300 µm in the interior of the cable. Inadmissible radial forces acting on optical cables, cause a rapid increase in the optical attenuation at the load point, which in turn reduces the information flow through the optical fibers. The fittings used for the installation and operation of optical fiber aerial cables must therefore meet exceptional high performance standards.

RIBE-OPTOFIT® fittings are specifically designed to meet these requirements. We started developing fittings for optical fiber aerial cables as soon as these cables appeared on the market at the end of the seventies. The range of RIBE-OPTOFIT® fittings has been proved in practice for decades and is continuously adapted to keep pace with the growing variety and constant improvement of optical fiber aerial cables. Our customers, such as electricity supply companies, optical cable manufacturers, erection firms, railway and telecommunication companies, receive the best technical solutions from the planning stage through to optimized fittings and state-of-the-art damping concepts for durable and reliable operation of their transmission lines.

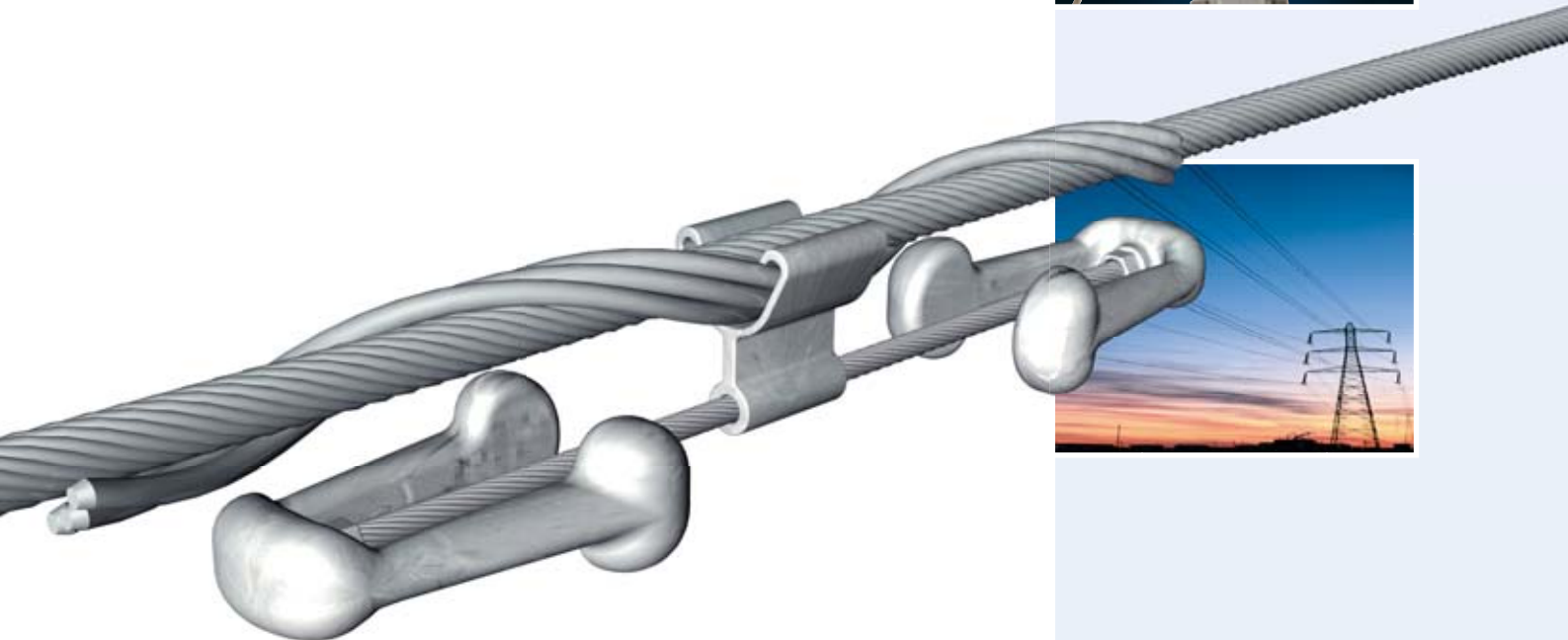
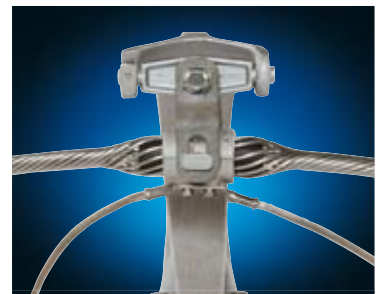


RIBE-OPTOFIT® helical fittings – optimized distribution of radial forces to the optical fiber aerial cable

RIBE-OPTOFIT® fittings are designed to meet the increased demands on optical fiber aerial cables and even exceed the necessary mechanical requirements. The range of RIBE-OPTOFIT® helical fittings includes a suitable solution for every application.

The method of operation of helical fittings has been adapted from nature and is based on the principle of a cable puller. The inside diameter of the unloaded helical rods is slightly smaller than the outside diameter of the optical fiber aerial cable. Installing these preformed helical rods creates a spring tension and sets up the mechanical preloaded contact. A special feature of this design is that the helical fitting distributes the forces acting on the cable uniformly over a large area of the cable, which avoids mechanical loads on the optical fibers.

The advantages of RIBE-OPTOFIT® helical fittings include easy installation and low load on the cable. The helical rods can be installed without tools and installation faults are impossible. The installation can be inspected visually from the ground level.





RIBE-OPTOFIT® – standard and high-performance fittings for optical fiber aerial cables

Optical fiber aerial cables are generally divided into two types:

- metal-armored cables (OPGW, OPPC, MASS)
- metal-free cables (ADSS, AD-LASH, AD-WRAP)

Metal-armored cables are installed in overhead lines to replace the ground or conductor wires. Metal-free cables are less expensive due to their design and are used mainly in supplementary installations.



OPGW

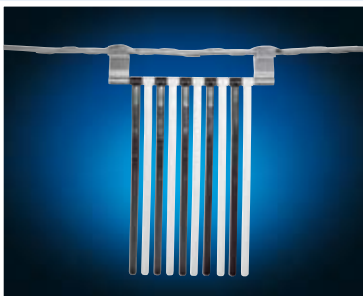
ADSS

Range of fittings for metal-armored aerial cables

RIBE-OPTOFIT® fittings for metal-armored optical fiber aerial cables are designed to resist large damage and failure loads.



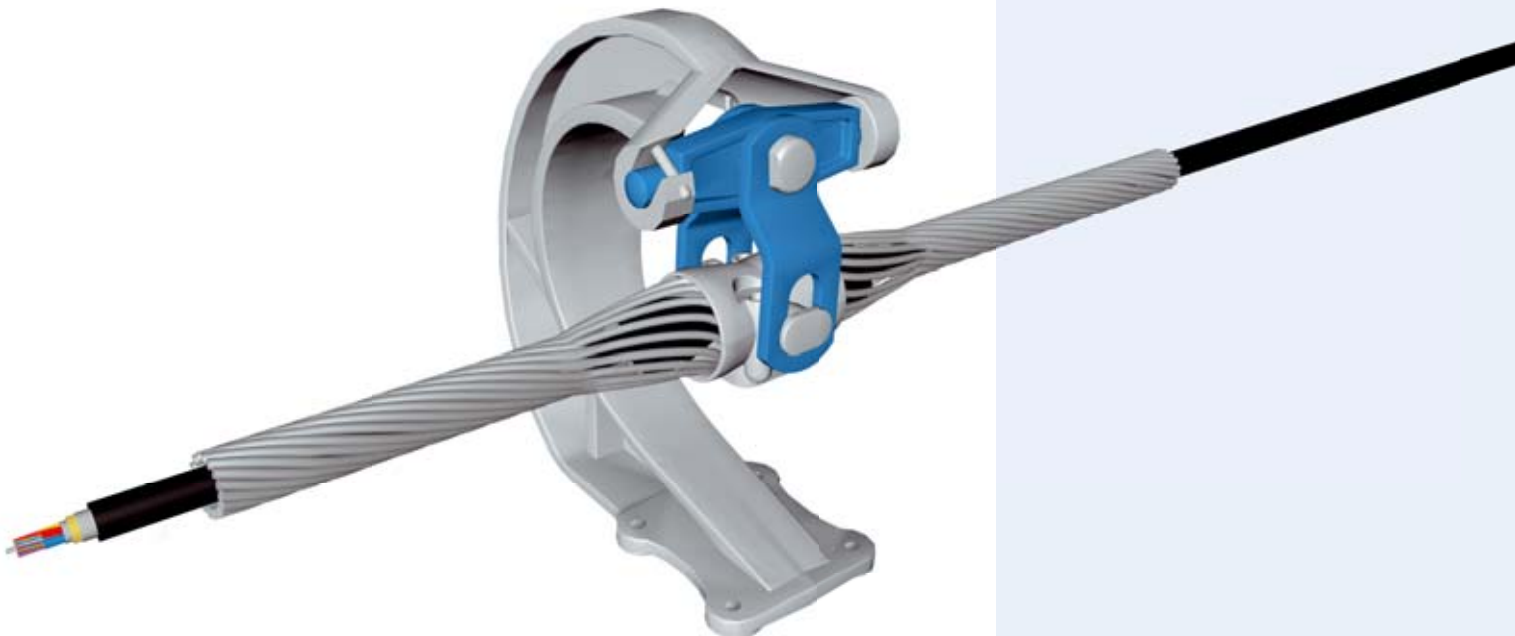
Suspension fittings	Tension fittings
Armor grip suspension clamps	AW helical dead ends
C-shaped supports	RW protection rods
Suspension supports	Thimbles
Shunts	Downlead clamps
Vibration dampers	Vibration dampers
Steel parts for tower attachment	Earthing connections
	Steel parts for tower attachment



Range of fittings for metal-free optical fiber aerial cables

The design of metal-free optical fiber aerial cables precludes the use of fittings designed for metal-armored aerial cables. The application of adapted fittings for different span lengths ensures that our customers receive optimum solutions.

Span length	Suspension fittings	Tension fittings
< 70 m	TG/LG suspension rods Suspension pulleys with helical rods Thimbles Suspension pulleys	AG helical dead ends Thimbles
70 - 150 m	TG suspension rods UTA protection rods Thimbles Vibration dampers Suspension pulleys Suspension pulleys with helical rods	AG helical dead ends Thimbles Vibration dampers
> 150 m	Armor grip suspension clamps Spiral basin suspension clamps Vibration dampers	AW helical dead ends RW protection rods AG helical dead ends URG protection rods Vibration dampers Thimbles





RIBE quality & RIBE service – for a long and uninterrupted life

RIBE-OPTOFIT® fittings easily meet the highest requirements. All RIBE solutions and products guarantee an excellent quality and a long durability – the result of perfect cooperation between development, production and sales combined with market knowledge.

RIBE-OPTOFIT® fittings ensure a long service life time and return on investment of your transmission lines. Our flexible production guarantees a constant delivery availability.

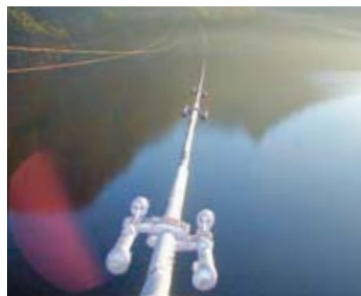
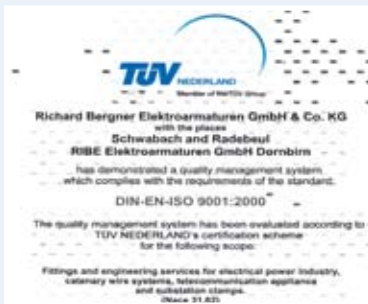


RIBE-OPTOFIT® – references for challenging solutions

In the past years, RIBE-OPTOFIT® fittings have been used in the implementation of a wide range of projects throughout the world. Our damping concepts for metal-armored and metal-free optical fiber aerial cables have been successfully used in projects with large span lengths. The calculation of the damping properties includes the placement of in-span aircraft warning spheres, protection rods and in-span vibration dampers.

References (engineering highlights):

- Sunndals fjord: 3 spans with a max. span length of 3,670 m (436 kN RTS)
- Bosphorus: 1,757 m span length (393 kN RTS)
- Lake Maracaibo: 2 x 15 x 1,500 m span length (234 kN RTS)
- Suez Canal: 700 m span length (205 kN RTS)



©Statnett



RIBE Engineering – 100 years of development and experience

Since RIBE was founded over 100 years ago, it has always been part of our corporate philosophy to not only develop and optimize new fittings in our own test laboratories and facilities, but to use our expertise to solve application problems as well. A fully equipped indoor vibration test bed with three spans (2 x 40 m, 1 x 30 m) is available for our qualified engineering team to perform vibration tests according to international standards and customer specifications.

Our laboratories use state-of-the-art systems for mechanical and electrical tests to enable us to react flexibly to verify the specific properties required by customers.

RIBE Engineering can solve the customer's application problems using its own numerical simulation tools or programs created in close cooperation with noted universities such as the Technical University of Dresden or the Technical University of Darmstadt.





RIBEF[®]

MADE TO **fit**

Richard Bergner Elektroarmaturen GmbH & Co. KG
Bahnhofstr. 8-16 · 91126 Schwabach · Germany · Telephone +49 91 22 / 87-0 · Fax +49 91 22 / 87-1506
E-mail elektroarmaturen@ribe.de · Internet www.ribe.de