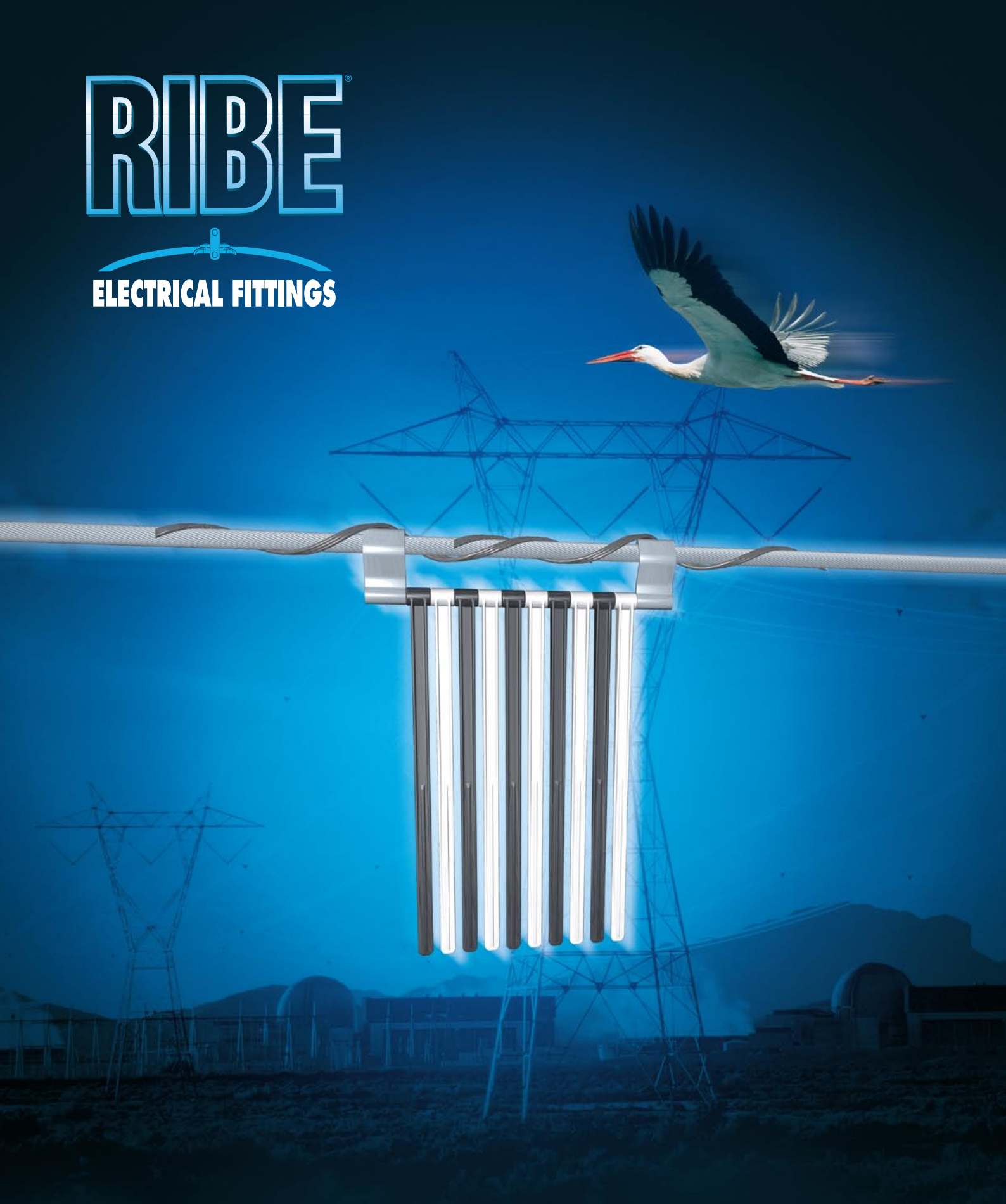
RIBE®

ELECTRICAL FITTINGS



RIBE® Bird Flight Diverter Fittings
Active Bird Protection for Nature

RIBE® bird flight diverters – your active contribution to protecting endangered species of birds

Many species of birds today are declining heavily in population or are even endangered. Ornithologists say the main reasons for this are fatal electric shocks received from overhead power lines and collisions with these lines. One in eight of the about 10,000 known species of birds on the red list is currently threatened, although this certainly cannot all be blamed on overhead lines. Scientific studies have shown, for example, that overhead lines and towers are the cause of over 70 percent of stork accidents in Germany. Large birds are at special risk when approaching high-voltage overhead transmission lines. On seeing the line, these birds always try to avoid it by flying upwards, but then often collide with the earth wire. The situation is increasingly alarming, especially for the endangered species.

The hazard is so significant that an agreement has been defined on the Conservation of Wild Life and Natural Habitats, Guidelines for the Protection of Birds from Power Lines in the "Bern Convention". These are implemented in national laws in all the countries concerned, for example, in Germany with the amendment of the Federal Nature Conservation Act, which stipulates compulsory bird protection on overhead lines and towers.

RIBE® bird flight diverter fittings are a sensible and effective contribution to the protection of wild birds, as overhead lines equipped with bird flight diverters substantially minimize the hazard caused by these lines.

Source: LBV-NABU Partners Bavaria

RIBE® bird flight diverters – developed for optimum effectiveness and minimum impairment of the line

Markings on the earth wire and conductors enable large birds to see the line at a distance and take early action to avoid it.

RIBE® bird flight diverters have been developed for optimum effectiveness based on ornithological research findings. As birds notice vertical structures better, all fittings are designed with distinct vertical lines. The RIBE® bird flight diverter flag has separate moving marking straps with a blinking effect and maximized contrast to improve noticeability even more.

A three-year field trial with bird flight diverters on the Bernburg – Susigke 110 kV line produced the following results:

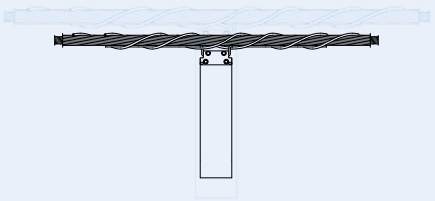
- Line without bird flight diverters **156 dead birds**
- Line with bird flight diverters (at 40 m intervals) **56 dead birds**
- Line with bird flight diverters (at 20 m intervals) **1 dead bird**

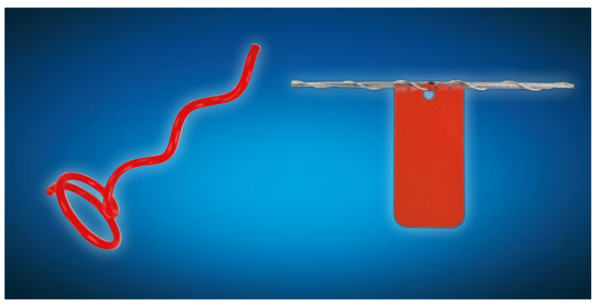
The current range of RIBE® bird flight diverters covers two types of fittings: helical bird flight diverters and bird flight diverter flags.

Colored helical bird flight diverters are made of weatherproof plastic and are fitted on the line to make the conductor visible. Colored bird flight diverter flags are also made of weatherproof flexible plastic and have helical rods for quick and easy fixing.

Helical bird flight diverter for all earth wires and overhead lines

Helical bird flight diverter flag for earth wires and overhead lines



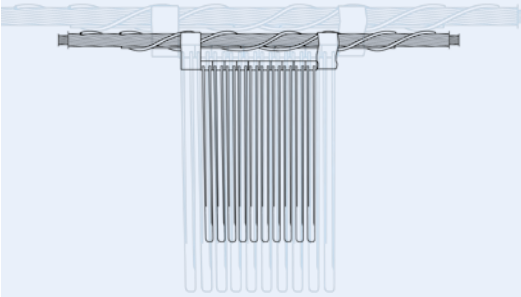


These fittings have been designed to minimize adverse effects on the overhead lines. For example, RIBE® bird flight diverter flags have swivel joints for a low wind load. This also ensures that the conductor remains visible in the event of conductor torsion. Optimized surface finishing reduces the risk of voltage discharges on the bird flight diverters, which would destroy the fitting.

Bird flight diverters can also be fitted using helicopters or hoisting platforms. The fittings are suitable for use on conductors at up to 145 kV. Certain bird flight diverter flags can also be used to mark overhead lines for aircraft.

The corona-free properties of helical bird flight diverters and bird flight diverter flags have been proved in dielectric tests at rated voltages up to 145 kV.

Bird flight diverter flag with moving marking straps for earth wires and overhead lines

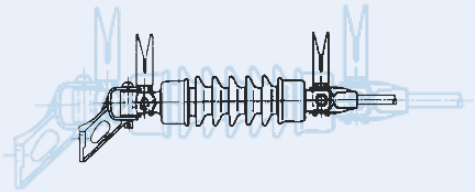


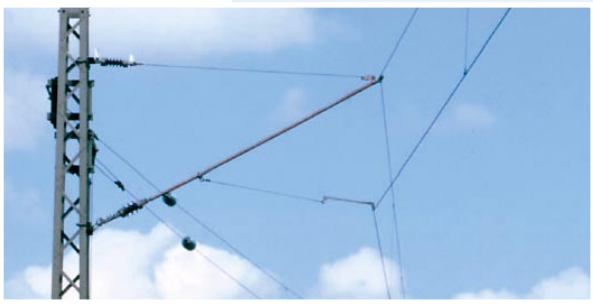
Bird flight diverters on overhead contact lines of electric railways

Overhead contact lines of electric railways should also be equipped with bird flight diverters. It is important to protect the catenary wire support points, as large birds in particular can cause short-circuits on the insulators here. RIBE® bird flight diverters for catenary wire support points prevent birds landing at these critical points.

Fitting bird flight diverters also reliably prevents beasts of prey like martens and weasels climbing over the insulators and causing brief earth short-circuits.

Bird flight diverter on catenary wire support point (top)





Endangered species of birds due to electrocution and collisions

Threatened with extinction	*Endangered*	*Endangered*
Long-legged buzzard	Carrion crow	Ring ouzel
Fish eagle	Blackbird	Common wood pigeon
Griffon vulture	Bearded vulture	Marsh harrier
Ural owl	Hobby	Rosy starling
Imperial eagle	Bee-eater	Redwing
Common raven	Roller	Woodchat shrike
Lanner falcon	Jackdaw	Snow owl
Red-footed falcon	Jay	Mediterranean gull
Red kite	Magpie	Lesser gray shrike
Lesser kestrel	Rock pigeon	Herring gull
Rook	Gyr falcon	Great white egret
Greater spotted eagle	Yellow hammer	Songthrush
Short-toed eagle	Corn bunting	Sparrowhawk
Barn owl	Gray heron	Starling
Egyptian vulture	Hawk	Minerva's owl
Lesser spotted eagle	Bonelli's eagle	Wheatear
Black kite	Stock pigeon	Pallid harrier
Black stork	Hen harrier	Common gull
White-tailed eagle	Lesser black-backed gull	Short-eared owl
Golden eagle	Levant sparrowhawk	Nutcracker
Steppe eagle	Common buzzard	Kestrel
Eagle owl	Merlin	Turtle dove
Peregrine falcon	Mistle thrush	Collared dove
White stork	Black-eared wheatear	Fieldfare
Saker falcon	Monk vulture	Tawny owl
Booted eagle	Night heron	Long-eared owl
	Red-backed shrike	Caspian gull
	Purple heron	Honey buzzard
	Great gray shrike	Hoopoe
	Rough-legged buzzard	Montagu's harrier
	Tengmalm's owl	

Source: © NABU Bundesverband, 2002

"Bern Convention"

Detailed guidelines on the protection of birds on "lethal towers" and power lines became part of European nature conservation policy for the first time at the beginning of December 2004. The signatory countries of the "Bern Convention" agreed to comply with the guidelines on reducing the danger to birds caused by power lines. 45 countries have signed the agreement so far, including European countries outside the EU and four African countries whose territories are the winter areas of some European species of birds.

Para. 53 Federal Nature Conservation Act

The amended Federal Nature Conservation Act came into force in Germany in April 2002.

The new paragraph 53 "Bird protection on power lines" stipulates: "New towers to be erected for medium voltage overhead lines and technical hardware shall be designed to protect birds against electrocution. Existing towers and technical hardware of medium voltage overhead lines that pose a high risk to birds are to be retrofitted to provide protection against electrocution by carrying out the necessary measures within ten years."

RIBE®

MADE TO fit

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