

All hardware fittings are designed, tested and produced according to relevant international standards (IEC, BS, EN ISO) and design is done on such way to ensure proper and easy installation and working characteristics. Based on customer request or relevant technical specification, characteristics of insulators, climate conditions and all other parameters, DALEKOVOD skilled team will offer appropriate technical solutions which will meet all customer requirements and relevant technical specifications (dimensions, breaking loads, short circuit current, zinc coat thickness, dielectric characteristics and other required characteristics).

Our skilled team of engineers will find optimal solution, using our hardware fittings, to design proper insulator strings and tension/suspension sets for OPGW or earth wire which will meet all required characteristics and enable smooth installation on site. DALEKOVOD is also equipped with the necessary knowledge and software for vibration calculation.

## references

Afghanistan Albania Algeria Argentina Austria Bangladesh Belgium Bosnia and Herzegovina Brazil Bulgaria Burma Burundi Chile Columbia Cuba Cyprus Czech Republic Egypt Ethiopia Estonia Finland Germany Ghana Greece Guatemala Guinea Honduras Hungary India Indonesia Italy Iran Iraq Island Jordan Kuwait Lebanon Libya FYR Macedonia Malawi Malaysia Malta Montenegro Morocco Mexico Mozambique Netherlands Nigeria Norway Oman Pakistan Paraguay Peru Philippines Poland Romania Russia Saudi Arabia Singapore Slovenia Serbia South Africa Sweden Switzerland Syria Sudan Taiwan Tanzania Thailand Togo Turkey U.A.E. Uganda Uruguay Venezuela Zaire Zambia Zanzibar Zimbabwe



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OUR EXPERIENCE IS YOUR SECURITY!



## hardware fittings for insulator strings

overhead transmission  
 lines 10 - 750 kV



- STEEL FORGED FITTINGS
- STEEL SHEET FITTINGS
- ARCING DEVICES (Arcing/Corona HORNS AND RINGS)
- SUSPENSION CLAMPS
- TENSION CLAMPS
- STOCKBRIDGE DAMPERS
- RIGID & SEMIRIGID SPACERS AND SPACER DAMPERS
- OTHER CONDUCTOR EQUIPMENT (PG CLAMPS, WARNING SPHERES, OPGW ACCESSORIES...)



Dalekovod d.d. (DALEKOVOD), company for design, engineering, production and construction, was founded in 1949. For more than 30 years now Dalekovod has been producing hardware fittings for overhead transmission lines, jointing equipment (substation connectors), catenary system, as well as all kinds of metal structures (steel-lattice towers, antenna masts, lighting poles, monopoles, as well as various other kinds of steel structures required in the field of power supply, road construction and civil engineering).



As part of its production programme the Company offers all kinds of equipment required for suspension and tension insulator strings (composite, glass or long rod insulators (ceramic)), tension and suspension attachments for earth-wires and OPGW, as well as all other conductor equipment, such as:

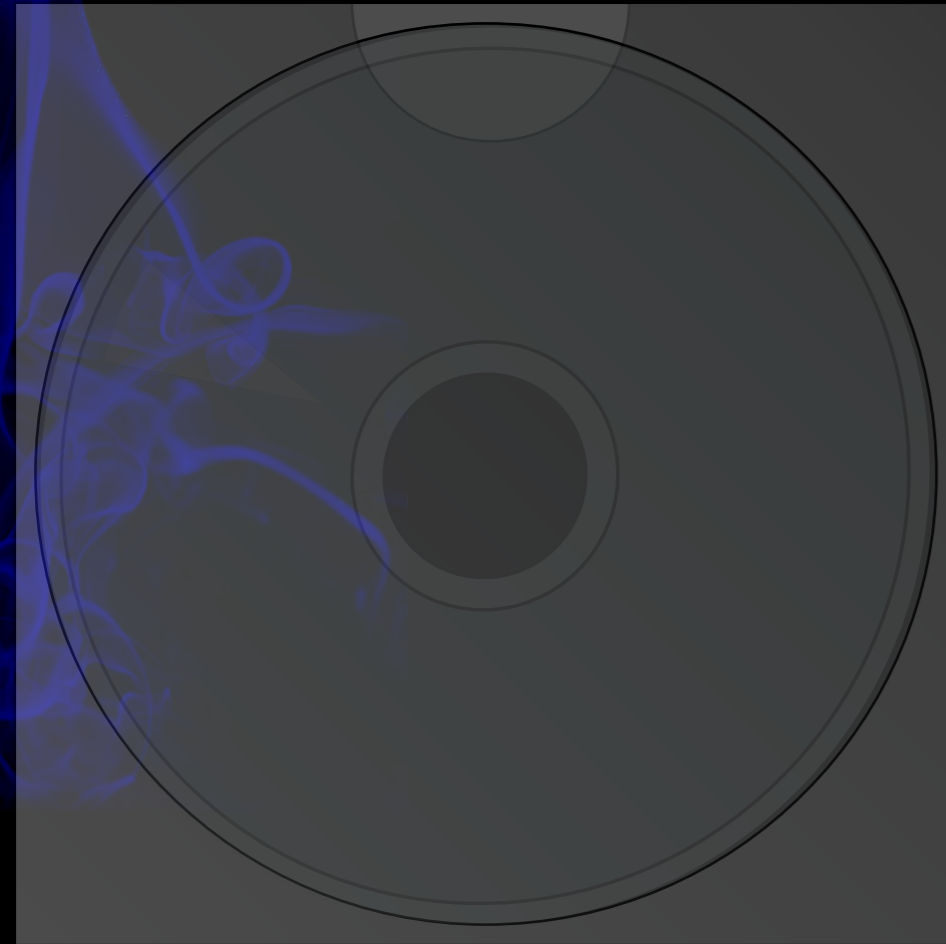
- **steel forged items** (shackles, ball fittings, socket fittings, clevises, hinges, eyes, turnbuckles, U bolts etc.)
- **steel sheet fittings** (yokes, extension links, hinges, adjustable extension links, sag adjusters)
- **protection devices** such as corona rings, arcing rings and horns
- all kinds of **suspension clamps** such as trunnion type, with attachment point below and above the centre of the conductor as well as helical grip suspension clamps (HGS) with armour rods suitable for OPGW
- all kinds of **tension clamps** (compression clamps, bolted clamps, wedge type clamps, mid span joints, spiral tension clamps for OPGW)
- other **conductor equipment** (PG clamps, „bretelle“ clamps, Stockbridge dampers, spacer dampers, rigid and semi-rigid spacers, warning spheres, tension dead end spirals, repair spirals and repair sleeves etc.).

Suspension equipment (hardware fittings) is produced according to relevant international standards (IEC61284, BS3288, IEC61897, ISO 1461, ASTM A153 etc.). DALEKOVOD delivers its equipment to various markets worldwide, and is accompanied with all the required type tests by renowned and independent laboratories. The best design and calculation programmes are used during the design and equipment construction process (Catia) in order to achieve the highest level of equipment design. In order to install Stockbridge dampers, spacer dampers and spacers correctly, DALEKOVOD has an appropriate vibration (damping) calculation software which enables clients to attain optimal damping efficiency as well as correct positioning along the transmission line.

Yearly production capacity exceeds 6000 tons of suspension equipment (hardware fittings). DALEKOVOD has all the necessary technologies needed for production (non-ferrous metal casting, forging of non-ferrous metals and steel materials, machining, metal sheet processing using deformation, welding, hot dip galvanizing, its own design and tool making), a modern machine park and a certified mechanical laboratory (HRN ISO/IEC 17025:2000) for control operations with a view to sustaining the necessary level of quality. DALEKOVOD offers a high level of flexibility in its production offering its buyers standardised products as well as products that will meet specific needs of different buyers and markets.

DALEKOVOD is able to customise its products to meet buyers' needs and requests. Feel free to approach us with trust.

# hardware fittings



## STEEL FORGED ITEMS



### Shackles and U bolts

Available in different dimensions and breaking loads from: **40-640 kN**

Surface protection: hot dip galvanised as per EN ISO 1461 or specific customer requests

Details available upon request



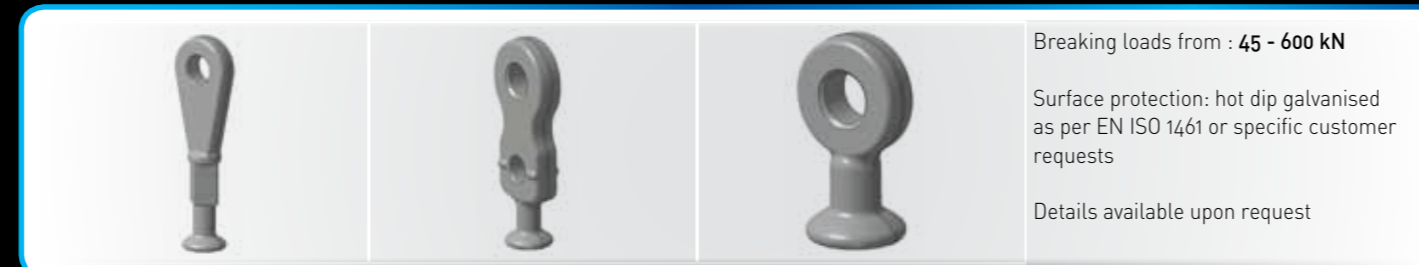
### Ball fittings

Available as **ball eyes, ball clevises & ball tongues** (with or without protection device connection)

Coupling sizes acc. to: IEC 11, 16, 20, 24, 28, 32, ANSI 52-3, 52-5, 52-8, 52-11

Various types of protection device connection

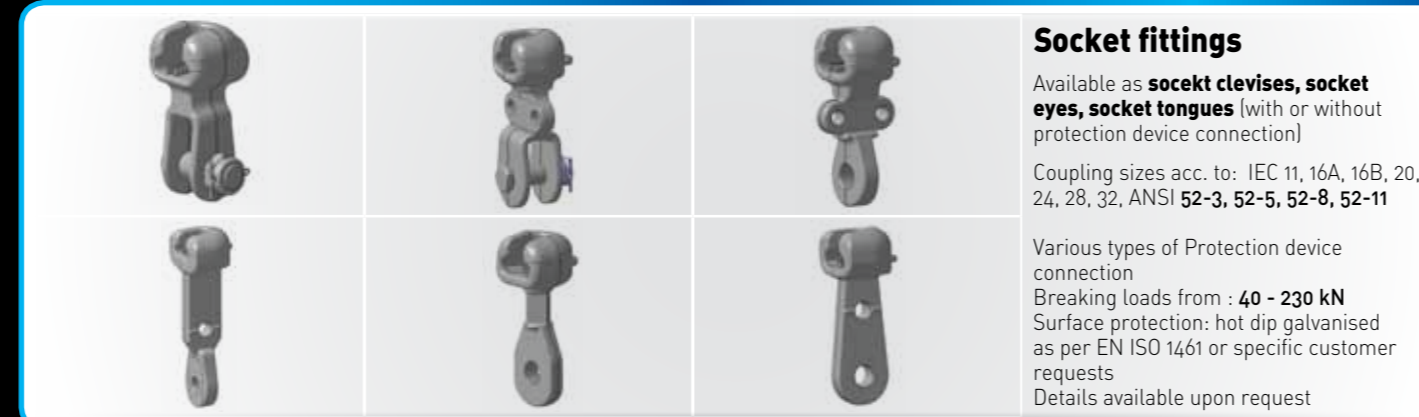
Details available upon request



Breaking loads from : **45 - 600 kN**

Surface protection: hot dip galvanised as per EN ISO 1461 or specific customer requests

Details available upon request



### Socket fittings

Available as **socket clevises, socket eyes, socket tongues** (with or without protection device connection)

Coupling sizes acc. to: IEC 11, 16A, 16B, 20, 24, 28, 32, ANSI 52-3, 52-5, 52-8, 52-11

Various types of Protection device connection  
Breaking loads from : **40 - 230 kN**  
Surface protection: hot dip galvanised as per EN ISO 1461 or specific customer requests  
Details available upon request



### Clevises, tongues, eyes, bolts and hinges

Available in different dimensions and breaking loads from: **70 - 800 kN**

Surface protection: hot dip galvanised as per EN ISO 1461 or specific customer requests

Details available upon request



### Turnbuckles (forged and made of tubes)

Available in dimensions from: 330 - 2000 mm

Breaking loads: **65 - 320 kN**

Surface protection: hot dip galvanised as per EN ISO 1461 or specific customer requests  
Details available upon request

## PROTECTION DEVICES (ARCING HORNS AND RINGS)



### Arcing horns and rings

Available with different shapes and size, made from steel bars, steel tubes or aluminium tubes.

Adjustable horns/rings

Connection dimensions as per: DIN 48068 or other, with two bolts

Surface protection of steel parts: hot dip galvanised as per EN ISO 1461 or specific customer requests

Details available upon request

## STEEL SHEET FITTINGS



### Extension links, adjustable extension links, sag adjusters, hinges, yokes

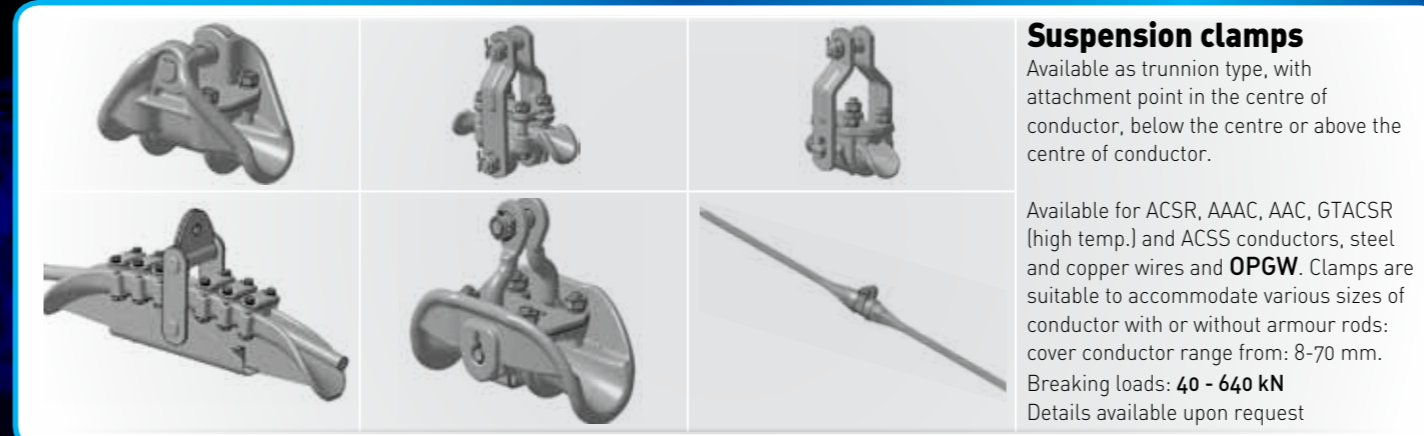
Available in plenty various dimensions and breaking loads

Surface protection: hot dip galvanised as per EN ISO 1461 or specific customer requests

Breaking loads: **80 - 640 kN**

Details available upon request

## SUSPENSION CLAMPS FOR CONDUCTORS, EARTHWIRES AND OPGW



### Suspension clamps

Available as trunnion type, with attachment point in the centre of conductor, below the centre or above the centre of conductor.

Available for ACSR, AAAC, AAC, GTACSR (high temp.) and ACSS conductors, steel and copper wires and **OPGW**. Clamps are suitable to accommodate various sizes of conductor with or without armour rods: cover conductor range from: 8-70 mm.

Breaking loads: **40 - 640 kN**

Details available upon request

## TENSION CLAMPS FOR CONDUCTORS, EARTHWIRES AND OPGW



### Bolted clamps, wedge type clamps, compression clamps, tension spirals for OPGW

Available for conductor sizes from: **6 - 44 mm**

Available for different type of conductors: ACSR, AAC, GTACSR (high. temp.), ACSS, copper, steel groundwires and OPGW (tension dead end spirals) 8 - 26 mm

Details available upon request

## STOCKBRIDGE DAMPERS



### Stockbridge dampers

Available for conductor sizes 8 - 36 mm and OPGW (in combination with armour rods)  
4 resonant frequencies

Material: Al alloy clamp, zinc weight  
Damper study and position calculation available

Details available upon request

## SPACER AND SPACER DAMPERS



### Spacers and spacers dampers

Available are rigid, semi-rigid spacers and spacer dampers. Heavy semi-rigid spacers for special purposes available too.

Available for conductor sizes from: **6 - 44 mm**

Damper study and position calculation available

Details available upon request

## OTHER CONDUCTOR EQUIPMENT FOR CONDUCTORS, EARTHWIRES AND OPGW



### Warning spheres, PG clamps, bretelle clamps, download clamps for OPGW

Available for conductor sizes from: **6 - 44 mm**

Details available upon request