

TRACTION

Fully insulated CCS-Jumper Partly insulated Coiled Jumper

 **ALPHA-ET**

Current and voltage – our passion



General description

General

In general, a distinction is made between fully insulated and partly insulated jumper cables. Both cables are manufactured according to customers' needs. They are optimized for the use in traction business and are flexible in a wide climatic range.

Partly insulated coiled jumper

The partly insulated, coiled car to car connection enables a high flexibility in all dimensions. It generally gets assembled to an ALPHA ESF-R (rigid cable termination) but can also lead to any other supporting insulator. The cable itself is partly insulated to avoid flashovers. Due to the not insulated jumper cable the required safety distances must be kept.

The coiled jumper cable is available at conductor diameter of 95 mm² and 120 mm². The length is available from 200 mm – 1000 mm between the connection points. The jumper supports movements in all three dimensions and is resistant to vibrations, proven in several tests.

The coiled jumper cable which is made for the roof-line is maintenance free and just needs visual inspection.

Fully insulated jumper cables

The pluggable fully insulated ALPHA CCS-Jumper consists of a highly flexible fully insulated high voltage cable with a CCS plug (connex connect system) on both ends. They require as a counterpart a CCS-bushing in which the jumper cable gets plugged into. The entire system is fully insulated that no safety distances are needed. To protect the cable against environmental effects, there can be also mounted an additional protective tube.

The conductor diameter of the cable is either 70 mm² or 150 mm². The movement in all axes is given by the high flexibility of the jumper cable which has a curved shape in the ground position. To realise better movement characteristics the cable can get supported by individually designed suspensions. To design these jumper systems, ALPHA has experience gained from various projects and also offers movement tests to proof functionality in a specific project.

The fully insulated jumper cable can be mounted on roof, under floor or between the cars. The cable is maintenance free.

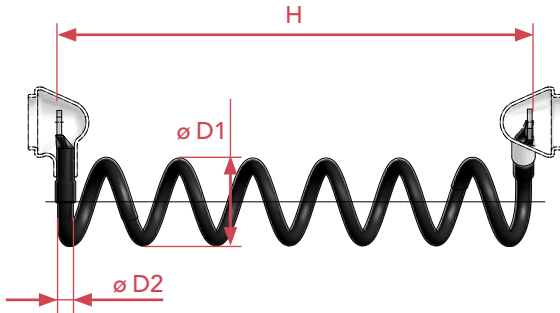
Benefits Jumper

- Customized engineering regarding voltage, jumper length and movement between the cars.
- Proven experience in various movement tests and thousands of installed jumper cables for rolling stock applications around the world.
- ALPHA jumper cables satisfy the requirements of the fire protection standard EN 45545-2:2013.
- Routine test of all assembled CCS jumper cables:
AC/DC voltage withstand test according to the standard DIN EN 50124-1:2006-04 and partial discharge test according to the standard IEC 60270:2000 (<10 pC for each assembled cable).
- Maintenance free car2car-connection guarantees low life-time costs.

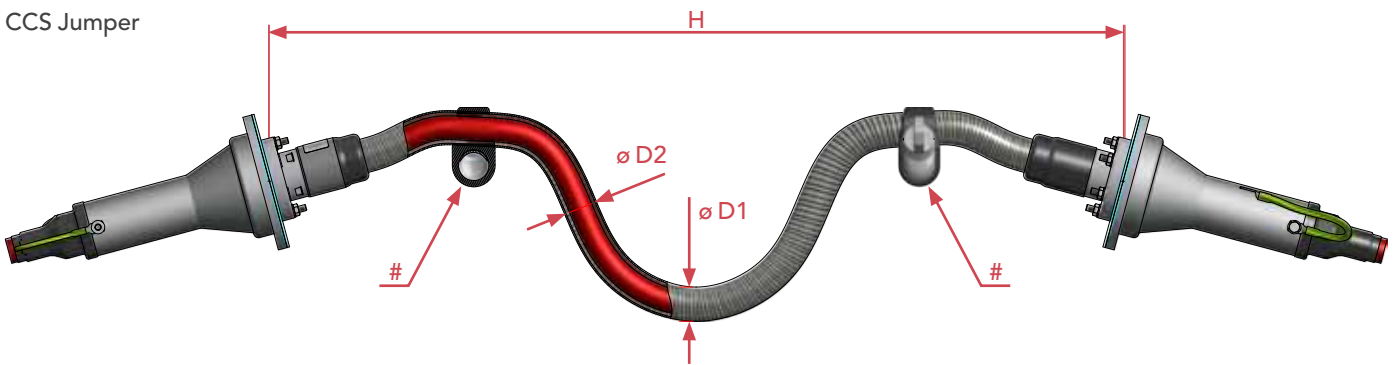
Technical data

Coiled Jumper

cable suspension individually engineered



CCS Jumper



Type		Coiled Jumper	CCS-Jumper
Rated voltage	kV	–	25
Maximum operating voltage	kV	–	36 / 42
Operating temperature	°C	–50 ... +90	–40 ... +90
Cable cross section	mm	95 / 120	70 / 150
H	mm	200 – 1000	*
D1	mm	120 ± 20	56 ± 2
D2	mm	21.5 / 26	70mm ² : 38 – 40 mm 150mm ² : 44.5 – 46.5 mm

* according customer requirements

Highlights



Movement, vibration and temperature tests

- Movement tests according to customers' needs. Various movements in all three axes, number of movements in accordance with the technical specification.
- Vibration and shock tests according to IEC 61373:1999.
- Cold test down to -50°C .
- Temperature rise test.



Customized engineering

- Technical assistance during the development and tender phase.
- Possibility of the length determination of the jumper cable through the ALPHA engineering team. This can even include a length determination on a 1:1 inter-car model with the required determinations.
- Experience in the engineering of cable suspensions for fully insulated jumper cables.



References

References fully insulated jumper cable
Bombardier Transportation: Twindexx
SBB, ZEFIRO ETR 1000

References partly insulated jumper cable
Hitachi Rail: IEP, ASR, WOE
Škoda: Panter
Alstom: X60 Batch B, Coradia
Bombardier: Talent 2



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DISCONNECTORS

