KLK weld

Welding procedure

KLK Exothermic Aluminium Welding

ELPA-CARRIL

Welding procedure for electrical connections of copper cable to the foot of the rail.

The **ELPA KLK-weld procedure** is the best solution for making electrical connection of copper cable to the foot of the rail, since a low electrical resistivity and a high mechanical strength are achieved in the connection without affecting the rail steel, because its temperature never exceeds 6000C.

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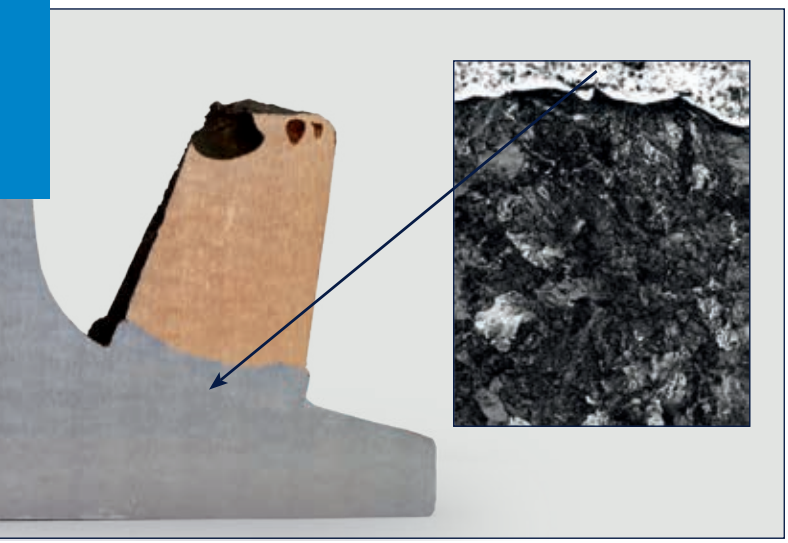
The electrical resistance in the connection is lower than 10-5 Ω, and the mechanical shear strength in the rail/plate joint is greater than 50 kN.



Unlike other welding procedures, the ELPA KLK-weld procedure does not affect the structure of the rail steel. A micrograph of the welded joint between the plate and the rail reveals that the structure of the rail remains unchanged and free from micro-cracks.

The **ELPA KLK-weld** procedure combines aluminothermic welding and braze welding processes in which the latter takes advantage of the heat produced in the former. A ferritic steel plate is placed between the copper cable and the foot of the rail so that the thermal shock of the aluminothermic molten metal is absorbed by it, and the copper cable is welded to the plate. Since the plate incorporates, on the side in contact with the rail, a tin-silver alloy, the final joint of the plate to the rail is made as a result of the combination of the heat that melts this alloy and the force of a clip-spring that pushes the plate against the rail during the solidification process.

Scan code and get more information.

The clip-spring acts as a clamping system of themould to the foot of the rail, being this systemvalid for most of the rail profiles.

The **ELPA KLK-weld** Kit includes:

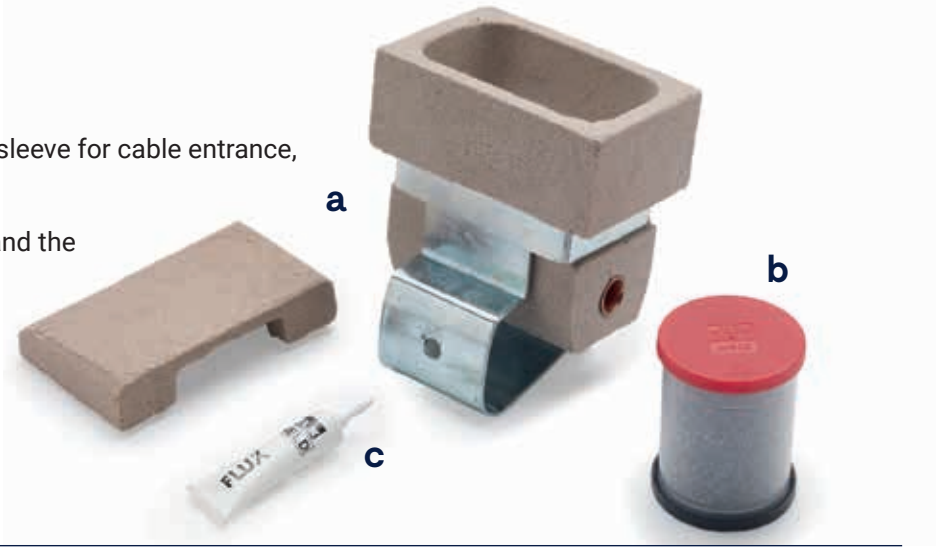
a. Ceramic mould with a steel plate, sleeve for cable entrance, sealing metal disc, lid and clip-spring.

b. Cartridge containing the welding and the ignition powder.

c. Flux portion.

d. Additional sleeves to be used with other cable sections (as an option).

e. User´s guide .



The ELPA KLK-weld kits are manufactured for copper cables ranging from 10 to 240 mm2 and can be used with most of the rail profiles: AREA, BS, UIC, U, S, RN, and so on. Examples of possible kits are:

Denomination	Possible cables (*)
Kit ELPA 10	10 mm² copper cable (Ø4,1 mm)
Kit ELPA 35	35 mm² copper cable (Ø7,6 mm)
Kit ELPA 50	50 mm² copper cable (Ø9,2 mm)
Kit ELPA 70	70 mm² copper cable (Ø10,9 mm)
Kit ELPA 95	95 mm² copper cable (Ø12,6 mm)
Kit ELPA 120	120 mm² copper cable (Ø14,3 mm)
Kit ELPA 150	150 mm² copper cable (Ø15,6 mm)
Kit ELPA 185	185 mm² copper cable (Ø17,6 mm)
Kit ELPA 240 R	240 mm² copper cable (Ø20,0 mm)
Kit ELPA 240 F	240 mm² copper cable (Ø23,0 mm)
Kit ELPA 12	Bulón Ø12 mm (**)

(*) Consult in case of other sections and/or diameters.
(**) The bolt can be welded to aluminum cable, or be part of a CuAl bimetallic terminal.

There is the possibility of using the **LsVIP KLK-weld ignition** procedure that prevents
spattering from the crucible, reduces the smoke emissions, and enables the ignition to be made at a certain distance. For this, the following items are needed:

a. Lid ELPA LsVIP.
b. Electrical Igniter Device.
c. Fuses (one unit per weld).

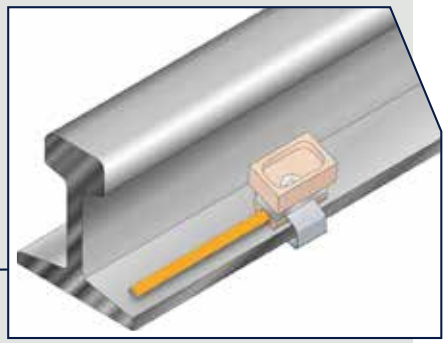
Take a look a Technical Article Elpa Track

Easy and convenient use.

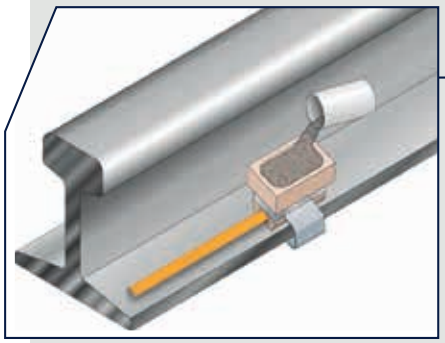
1. Clean and grind the rail surface.

2. Apply the fluxportion to the prepared area.

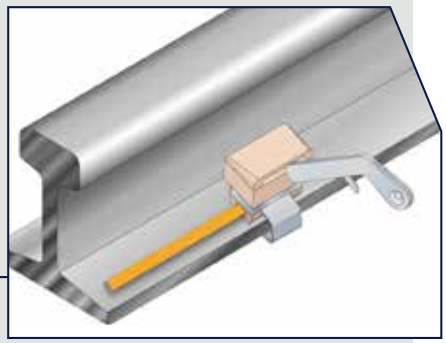
3. Put the mould in place.



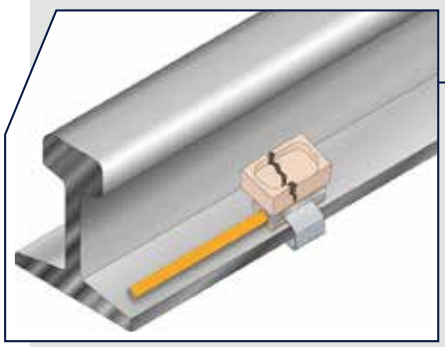
4. Insert the cable into the mould.



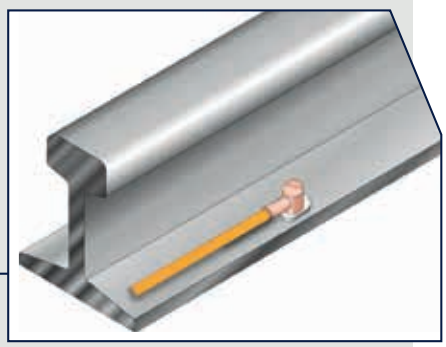
5. Pour the welding powder.



6. Perform the ignition.



7. Wait for solidification, break the mould and clean.



8. Finished weld.

Welding procedure ELPA

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