

FL 200/260 (T)



Furrer+Frey

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Conductor rail

Overhead contact lines

Railway safety control system for depots

Engines and tools

FL 200/260

It began over 80 years ago!

The company pioneers took the opportunity to make future oriented contributions toward the electrification of railways in Switzerland. We are still facing the challenge of offering various railway companies, at home as well as abroad, overhead contact lines for different current systems. Today we are experienced overhead contact line specialists with a large range of services to offer: engineering, planning, production, delivery of material, erection and maintenance. We also provide and hire out tools and special equipment for installing overhead contact lines.

We here show one of the overhead contact line systems developed by Furrer+Frey. This type of construction with a hinged cantilever is easy to adjust and was developed for high speed railways, velocities around 260 km/h, using alternative current. With appropriate insulators its use can be extended to railways with direct current.

All components normally required are already listed in our catalogue. The components are manufactured of corrosion resistant materials and grouped in systems which are described in our installation manual. Our planning is assisted by computers using the 3D-tool ELFF.



Insulation with stand-off

The insulation with stand-off is only used when the mast is at a distance from the track and a very long cantilever is to be avoided. If an independent current carrying cable is supported by the same mast the stand-off makes it possible to ascend the mast without having to switch off the current.



Base plates

Naturally this type of overhead contact line sets no limits to the choice of the mast. Most masts delivered by us are H-sections with base plates. In the case of railways using direct current, it is necessary to insulate the foundation bolts in order to avoid leakage current. For this we also keep the required parts.



Mast stand-offs

We design and supply the required stand-offs in case the mast is to be fastened to a building.





Railway stations

Our type of construction is also used in stations...

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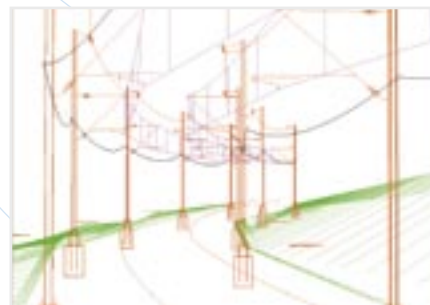
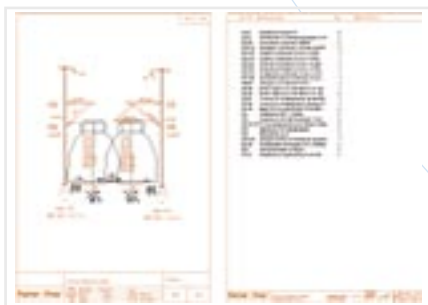
...quite often in difficult situations and with complex problems to be solved. Like the phase breaking section in a narrow curve as shown here.

Conductor rail

Overhead contact lines

Switching points

We plan and build switching points.



ELFF / FALP

We plan catenary installations by means of our 3D planning tools ELFF and FALP. With these tools we make the layout plans, cross sections and components lists (bills of quantity)

Railway safety control system for depots



DCM

Checking the overhead contact line with our DCM system (Dynamic Catenary Monitoring)

Engines and tools



The cantilever is the core of our construction. Its light-weight components and simple geometry, the absence of telescopic tubes, turnbuckles and wire clamps facilitate installation and possible modifications. The cantilever tubes are available in three different materials:

- hot-dip galvanized steel
- stainless steel
- aluminium

The fittings are aluminium castings. Small parts like clamps and bolts are manufactured of stainless steel.

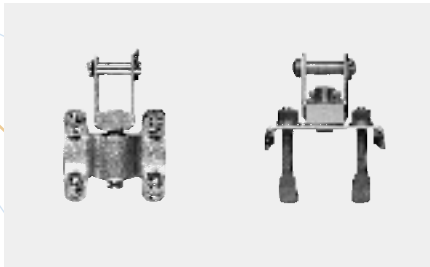
The cantilever shown has a short circuit resistance of 50 kVA during 60 ms.



Fitting

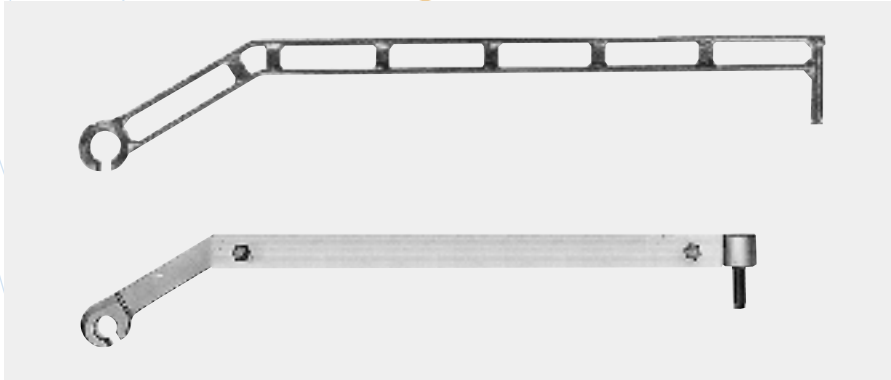
The few components are easy to assemble and to fit.





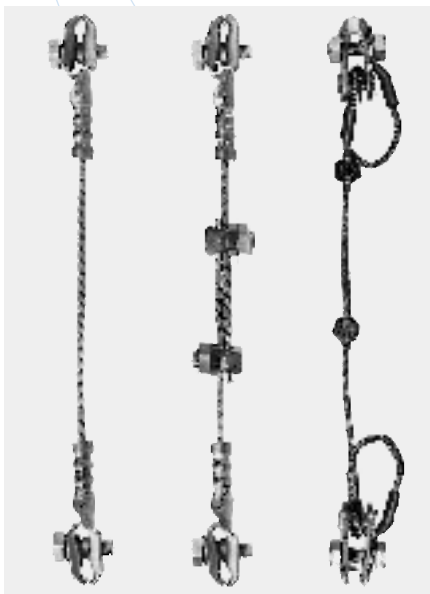
Messenger wire suspension clamp

The messenger wire suspension clamp is fitted with a universal joint. The basic model may be adapted to several wire dimensions by turning the cover.



Steady arm

The steady arm may be manufactured of either stainless steel or aluminium. All normal types of contact wire may be fastened with our clamps.

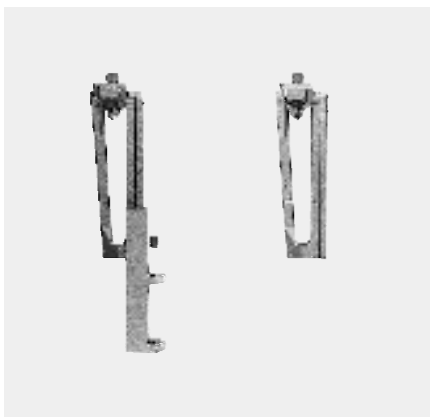


Droppers

There are several types of droppers:

- current carrying or not
- adjustable or not
- with bolt or crimp
- with wire 16 mm² or 25 mm²

all made of copper wire and copper alloy clamp parts.



Pull-off arm

If required, the pull-off arm on the steady arm tube may be fitted with a sliding part. This allows the steady arm to always have enough clearance for the uplift irrespective of the ratio radial force / vertical force.



Insulators

The insulators of the cantilever tube and the strut tube are identical which facilitates the installation as well as the stock-keeping. Insulating bodies made of ceramics or composite are standardized. The nominal voltage is 15 or 25 kV for alternating current and 1,5 or 3 kV for direct current.



Terminations

Both contact and messenger wire are automatically tensioned. We can offer an interesting range of tested tensioning devices. The tensioning device is fastened either to the mast or to the termination beam. The pictures show a termination beam over several tracks. The counterweight wheels are placed horizontally or vertically, ratio 1:3, which allows the mass of the counterweight to be reduced accordingly. Of course we also have a comprehensive assortment of simple counterweight wheel tensionings.



FL 200/260 T

Switzerland is a mountainous country. Therefore our overhead contact lines have been installed in many tunnels where they prove very successful. The solutions and components developed are integrated in our system. FL 200/260 T is in use in the Zimmerbergtunnel (Swiss Federal Railways SBB Rail 2000). For the Lötschberg base tunnel AlpTransit BLS has chosen FL260 as basic system for the tender.



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Feeder

Switching point with power supply from 15 kV feeder line.



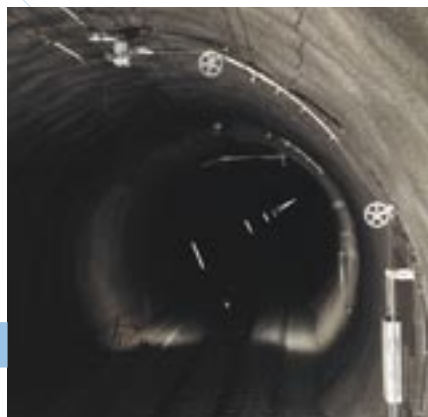
Support

On flat tunnel ceiling or in tunnel vault.



Termination

Tensioning arrangements in tunnel.





Your partner for planning, supplying and installing overhead contact lines.

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