

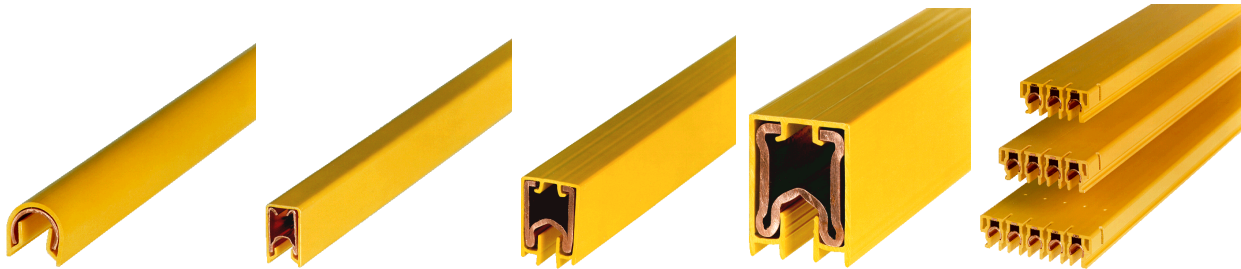
Maintenance Instructions



Conductor Rails

For all Copper Rail Applications

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DANGER!

Danger of injury by electric shock!

- Prior to inspection, maintenance or repair on the conductor rail, the system must be disconnected from the main power supply and secured against unauthorized, accidental and/or improper reactivation.
- If, in special situations, there is no main switch, the disconnection from the power supply is to be handled according to specifications.
- The parts that have been disconnected must first be checked to ensure they are not carrying current, next grounded, and finally short-circuited. Isolate neighboring parts that are carrying current!
- Before each start-up, an insulation check must be performed in accordance with the local technical standards, specifications and laws.
- If a conductor rail heater is present, it must also be disconnected from the power supply. Care must be taken to ensure that each individual heater circuit is disconnected from the power supply.

1 Conductor rail surface

The condition and performance of a conductor rails system are depending of the running surface quality. The conductivity and friction characteristic are depending of the conductor surface status. To use the rail system it is important to know some basics about the technical basics of the conductive system.

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A raw surface after a cleaning with sand paper or a surface with oxide has low performance and high friction and brush wear. Also an unused copper shinning surface does not offer the best performance. The best performance offering a used conductor rail, with patina on the brush runs way.

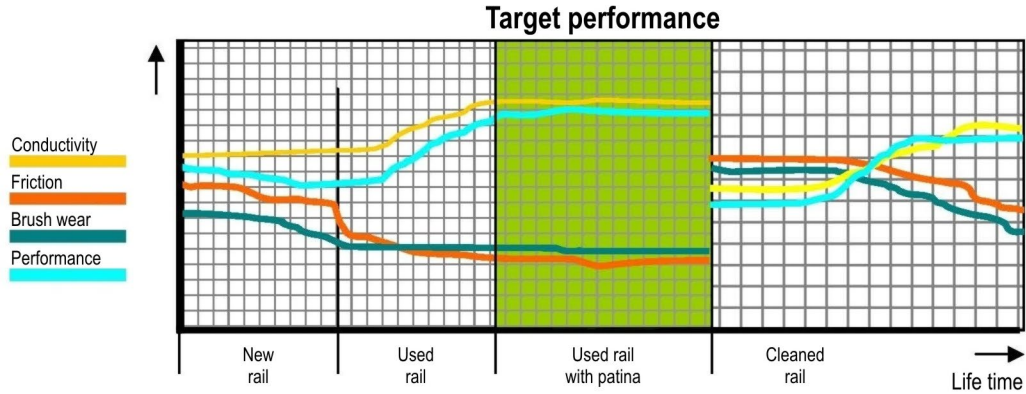
This steel blue to black shinning surface is build up by an electromechanical and electrochemical process. The patina is a material change into the copper rail surface with is needed to reduce friction or vibration free running free conditions and also reducing brush and rail wear. This polished and hardened material surface has also a very good transfer resistance and higher bandwidth than a rail without patina or oxide and must not be removed!

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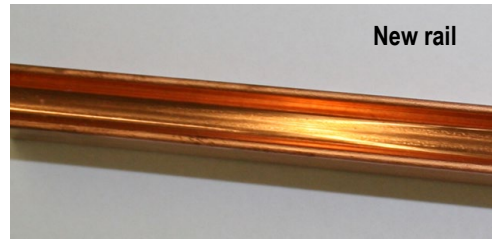
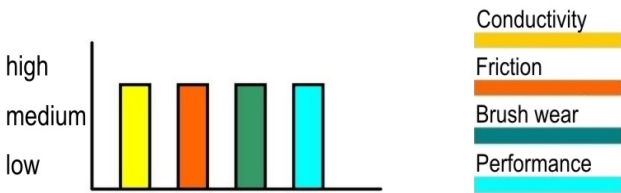
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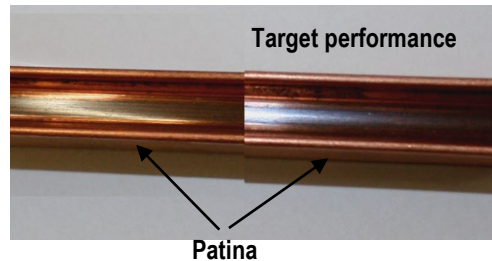
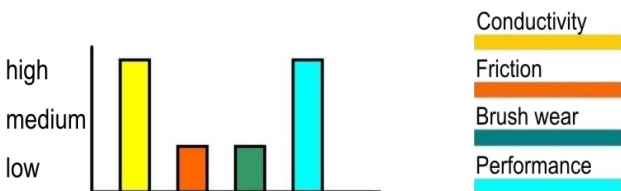


Status of the conductor rail surface:

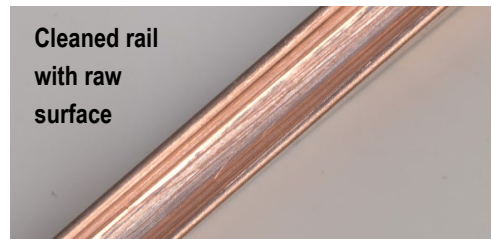
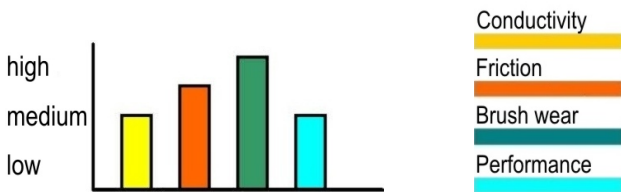
a) New unused copper rail (shinning polished surface)



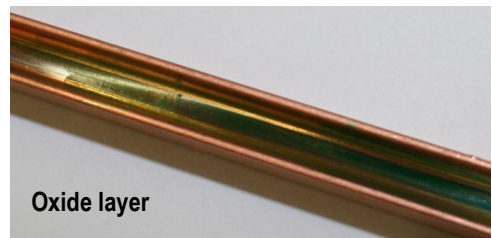
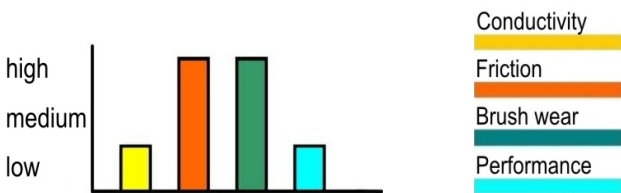
b) Conductor rail with patinated surface (with steel blue to black shinning polished surface-line)



c) Cleaned copper rail (copper coloured rail with scrub marks)



d) Copper with oxide formation (brown to green raw surface)



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2 Cleaning

The conductor rail surface should be only cleaned for following purpose:

- Removing of loose and adhere dust, dirt, fibers and chips (paint brush and vacuum cleaner or temporary use of cleaning brushes mounted onto the collector arms).
- Removing of contaminants (textile cloth and if needed approved cleaner liquid), see instructions in "WV0800-0001-E Cleaning of conductor rails".

Do not remove the patina!

Remarks: Use only sand paper to remove burning marks or hard contaminants. Use only fine sand paper > 180 and for the finish min. 400 grid paper.

Use only approved cleaner (see instructions in "WV0800-0001-E Cleaning of conductor rails"). Do not use degreasing spray like engine cleaner or brake cleaner! This can be increase the wear and friction by removing the lubrication from the carbon material.