Commissioning Checklist

Conductor Rail System in Crane Application

0811 + 0812 + 0813 + 0842

This checklist should be used as a guideline to ensure the safe operation of the electrification system!

The checklist is addressed to qualified specialists who install and commission energy transmission systems and who are familiar with the regulations regarding work safety and prevention of accidents.

Read and follow all safety and warning instructions in the related installation instructions.

During initial commissioning the acceptance report has to be completed!

Project:	
Customer:	
CXW-Order-No.:	

End Customer:	
Address:	
Country:	

Facility/Building/Block/Aisle:	
Serial Number (if applicable):	
Period of commissioning:	
Additional Remarks:	

	Commissioner/Service Technician
Name:	
Date:	
Signature:	

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No.	**Description** (cross out if not applicable)	Remarks	OK	Not OK
1	**Conductor rail**			
1.1	Conductor rail installation positioned according to installation tolerances: ○ Height (taking reference point into consideration, e.g. crane beam). ○ Along Length (taking reference point into consideration, e.g. crane beam). ○ Center distance between conductor rails.			
1.2	Height of conductor rail relative to crane beam along entire length of system installed evenly (or within tolerance range of the current collectors).			
1.3	Conductor rail reference points taken into consideration when using cranes in different systems/buildings. (Conductor rail may need to have the same installation heights relative to the crane beam reference point and the crane).			
1.4	Installation in permissible installation orientation and environment. (e.g. protected outdoor use, temperature range).			
1.5	Correct insulation used considering maximum working temperature ○ (Standard insulation: PVC 75°C) ○ (High temperature insulation: PPO 115°C short term 135°C) **CAUTION: Watch out for heat radiators and other heat sources in direct vicinity!**			
1.6	Rail joints and transitions checked and positioned without alignment problems. Minimum gap between rail ends complies with installation guidelines (with 812+813).			
1.7	Cut conductor rails are ground down so that no cutting edge protrudes into the sliding surface of the conductor rail.			
1.8	Transitions between conductor rail and other components (power feeds, end caps; air gaps, pickup-guides) spot checked for secure connections.			
1.9	0842 system angle clamping installed using installation block.			
1.10	Wampfler conductive grease: For outside installations with screw connectors and/or aluminum rails rail joints and clamping surfaces of the connector are equipped with a thin film of conductive grease to protect against joint corrosion (recommendation).			
1.11	Length of insulation profile correct: ○ For rails shortened on-site, insulation profile properly shortened according to installation guidelines ○ Covers on rail connectors properly installed			

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No.	**Description** (cross out if not applicable)	Remarks	OK	Not OK
2	**Rail connectors**			
2.1	Rail connectors installed properly. (Installation sequence observed for bayonet connectors or tightening torques for screwing systems).			
2.2	Rail insulation and rail connector cap overlap sufficiently and are engaged or securely screwed together.			
3	**Expansion units**			
3.1	○ Expansion units are correctly mounted (screws in sliding connection not tightened). ○ Air Gap is adjusted properly according to installation instructions. ○ An additional rail holder is mounted in the center (see Installation Instructions 812/813).			
3.2	Correct number of expansion units is installed according to system length and temperature ranges. (See calculation guidelines or project specification).			
3.3	No cutting edges are present at expansion unit rail ends and at air gap.			
4	**Hanger clamps**			
4.1	Suspension distance not exceeded according to system specification (or project planning). **NOTE: suspension distance in curves may be smaller!**			
4.2	Minimum installation distance of hanger clamps in relation to ○ Power feeds ○ Rail connectors ○ Expansion units ○ End caps, etc. Not violated according to system specification or layout plan. (e.g. for Program 0812 and 0813, at least 250 mm or according to layout plan). **WARNING: Collision and blocking of the above components on the hanger clamps prevents expansion of the system. This results in compression of the conductor rail and the insulation on components can be pushed aside, so that electrically live parts can become exposed and uninsulated. Safety-relevant!**			
4.3	Fastening of hanger clamps to the substructure performed properly ○ Mechanical connection ○ Number and type of fasteners ○ For exposed systems at risk from storms, storm protection provided			

No.	**Description** (cross out if not applicable)	Remarks	OK	Not OK
4.4	Hanger clamps (esp. compact hanger clamps) are evenly spaced and straight. Rails can move freely in gliding motion and do not cant in the hanger clamps.			
4.5	Use of insulators for operation voltages > 690 V (max. 1000 V).			
4.6	Use of insulators in applications with high amounts of dust in combination with moisture or conductive dusts.			
4.7	Use of insulators in applications with high salt concentration in the air and humidity. (e.g. spray in the direct vicinity of the sea and high temperatures and low precipitation).			
4.8	Hanger clamps with Insulators correctly mounted and without damages.			
5	**Power Feed**			
5.1	Connection cable on power feeds checked: o Connection point with clean bonding o Firmly seated on the feed o Proper screw connections o Sufficient cable length due to thermal offset of the power feed in the rail line			
5.2	Sufficient power feed points available taking the following into consideration: o Layout (e.g. single line diagram) o Current load o Voltage drop o Max. possible cross-section of connection cables (e.g. 812: 95 mm², 813: 185 mm²)			
5.3	Insulation or terminal boxes o Properly closed o Covers engaged respectively securely screwed			
5.4	Insulation check per power feed performed or alternatively customer informed. (see MV0800-0019). o PE – Phase: PE – L1, PE – L2, PE – L3 o Phase – Phase: L1 – L2, L1 – L3, L2 – L3			
6	**Anchor clamps**			
6.1	Anchor clamps correct according to specification with respect to: o Number o Position (according to installation guidelines or project planning) o Function (screws clamp properly, rail is fixed, plastic not broken by too tightly fastened screws)			

7	**End caps**			
7.1	End caps are present, correctly installed and fixed.			
8	**Pickup-guides (if applicable)**			
8.1	In case of opposing pickup-guides sufficient distance available by taking into consideration the expansion of the conductor rails.			
8.2	o Pickup-guide positioned according to vertical and horizontal installation tolerances in relation to the reference points. o Pickup-guides adjusted regarding static dimensions. o Distances of hanger clamps in front of pickup-guide correct. o Anchor clamps installed in front of the pickup-guide. o If possible checked under dynamic load (operational load case). o Comply with tolerance under load (e.g. buckling of the crane beam).			
9	**Air gap (if applicable)**			
9.1	Air gap properly installed (see installation guidelines).			
9.2	Additional hanger clamps installed around the air gap according to Installation Instruction (Distance of hanger clamps around the centered air gap is max. 500 mm with series 812 and 2500mm with series 813).			
10	**Current collectors**			
10.1	Protective measures (e.g. contact protection, installation height) are available for non engaged current collectors. If there is no protection present, commissioner shall give instructions to the operator.			
10.2	Installation position of the current collectors adjusted within the tolerance range relative to the conductor rail.			
10.3	Connection cable equipped with flexible, or for single current collectors with highly flexible cable. **NOTE: Incorrect connection cables can lead to restriction of mobility and loss of function. Moreover, insufficiently flexible cables lead to broken strands, resulting in turn to thermal overload due to the reduction in cross-section!**			
10.4	Layout of the connection cables in such a way that the cable cannot exert force on the connection trolley or collector heads. Cables must be freely movable and not bundled or restricted by cable binders or protective hoses. **WARNING: Failure to comply with the preceding can lead to restriction in mobility, uneven wear on carbon brushes, increased wear, loss of contact, loss of function!**			

10.5	Current collectors suitable for the installation arrangement respectively for the use of pickup-guides and transfer points (e.g. Double Current collectors at transfer points, stroke length limitation, compensation springs for lateral access, etc.).			
10.6	Tension springs on current collector attached in correct position for reversing or towing mode (Program 0811 and 0831 only).			
10.7	Carbon brushes checked for free mobility on connection trolley (0842 only).			
10.8	Sufficient number of current collectors installed according to current load capacity of the carbon brushes. **NOTE: Max. current consumption per current collector < 50% of the rated current in stillstand operation (aluminum-stainless steel rails 0812/0813 only)!**			
10.9	Current collectors under roof in outdoor park position. **NOTE: Recommended for installations with weathering during winter!**			
10.10	Towing arm length adapted to the current collector (collision-free).			
10.11	Towing arm design stable and as short as possible (if supplied by customer).			
11	**Heating (if applicable)**			
11.1	For installations with aluminum rails in exposed outdoor areas a heating system is present. (Use if temperature is < +5°C and humidity > 40% relative humidity, if ice and hoar frost is possible).			
11.2	Insulation check performed of heating cables to the conductor rail. (No electrical connection between heating and conductor rail pole present). See also MV0800-0018			
11.3	Heating connected according to the connection schema (project-specific layout). **WARNING: Always request the designer/manufacturer. Connection drawings of the temperature control devices may differ from the project-specific correct connection schematic! - Incorrect connection can lead to fire in the conductor rail and loss of function!** **WARNING: Customer-provided heating electrically live even with the conductor rail shut off, or forced shutoff of heating provided when conductor rail is shut off (e.g. in case of maintenance works)!**			
11.4	End cap with heating cable connection installed for de-icing system (0812+0813). **NOTE: Heating cable not jammed between insulation, conductor rail and end cap; heating cable insulation not damaged!**			
11.5	Passive connection cable (cold cable) laid out even into the rails.			