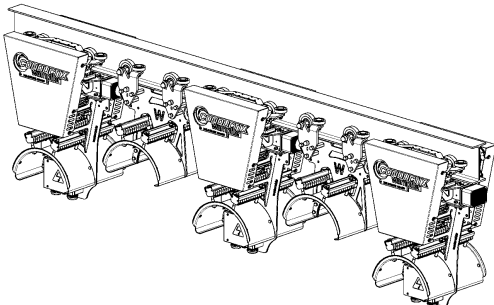


Commissioning Checklist



Motorized Festoons Systems

Series 0380



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 assembly instruction MAL0300-0005.

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:	

NOTE: If required please sign and write down the dates for the mechanical and electrical commissioning!

Commissioning Checklist

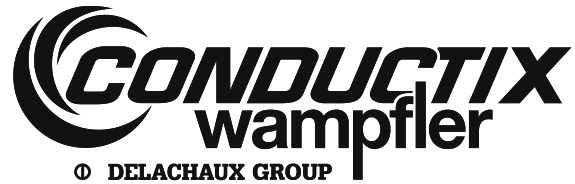


Motorized Festoons Systems

Series 0380

No.	Description	Remarks	OK	Not OK
1	Check of the mechanical components			
1.1	Running beam (provided by the customer)			
1.1.1	The track of the trolley corresponds to the project-specific technical documentation.			
1.1.2	The track beam for the festoon system in alignment to the crane carrier is mounted straight according to the tolerance requirements.			
1.1.3	Joints of the track beam have no height and side offset.			
1.1.4	Welded joints of the track beam are ground smooth on all roller surfaces.			
1.1.5	The track beam on the hinge point (e.g. on STS cranes) is built and ground in accordance with the tolerance requirements.			
1.2	Trolleys			
1.2.1	The storage length of the festoon system corresponds to the project-specific technical documentation.			
1.2.2	The horizontal guide rollers of the trolleys are adjusted to the track beam.			
1.2.3	Anti-lift rollers are present on the towing trolley.			
1.2.4	The tension of the tooth belts is in the allowed tolerance.			
1.2.5	There are no height differences - all buffers meet centrally.			
1.2.6	The towing arm is mounted in the middle of the window of the towing trolley and has play in all dimensions.			
1.3	Cables			
1.3.1	Cables are to be arranged according to specifications in the cable arrangement recommendation (see project-specific technical documentation).			
1.3.2	The cables are mounted on the cable supports in such a way that the cable trolleys run horizontally on the track beam (balance of the cables on the right and left cable supports). Cable clamps firmly tightened so that cables cannot be pulled out manually, <u>but</u> without crushing the cables.			
1.3.3	Loop lengths of the cables correspond to the specifications of the project-specific technical documentation. The permissible length deviation is ± 50 mm.			
1.3.4	Cable clamps (round and flat cable clamps) are mounted in the loops at the same height, corresponding to the project-specific documentation (system sketch) with the necessary displacement. The permissible height deviation is ± 150 mm.			
1.3.5	Cables are arranged free of twists.			
1.3.6	Cables show no damage caused by transport or assembly.			

Commissioning Checklist



Motorized Festoons Systems

Series 0380

No.	Description	Remarks	OK	Not OK
1.3.7	Cable ends (installation lengths) are arranged with the right length to the end or towing side.			
1.3.8	Special component parts such as spacers, additional clamp pieces and cable organizers are to be mounted according to the project-specific technical documentation.			
1.4	Ropes and cords			
1.4.1	The length of the installed towing ropes for each cable loop corresponds to the project-specific technical documentation. The permissible length deviation is ± 50 mm.			
1.4.2	Ensure that the shackles for fastening the towing rope can be freely moved after installation and lubrication.			
1.4.3	The towing ropes and shock cords show <u>no</u> damage caused by transport or assembly.			
1.4.4	The number of shock cords used for each cable loop corresponds to the project-specific technical documentation.			
1.4.5	The length of shock cords used for each cable loop corresponds to the project-specific technical documentation. The permissible length deviation is ± 50 mm.			
1.4.6	The towing ropes and shock cords are mounted free of twists.			
1.5	End clamp / towing clamp			
1.5.1	The end clamp is mounted on the track beam in proper alignment: Vertical and horizontal deviation target $\pm 1^\circ$.			
1.5.2	The end clamp is equipped with a shear plate that has been subsequently welded on the track beam.			
1.5.3	The towing clamp is mounted at the right height and centrally meets the buffer of the 1st cable trolley.			
1.5.4	The towing clamp is mounted on the track beam in proper alignment: Vertical and horizontal deviation target $\pm 1^\circ$.			
1.6	General			
1.6.1	All screws have a sufficient length and are secured. The projecting ends of the screws are visible (at least 2 thread projection).			
1.6.2	Check steel structure for collision-free travel of the festoon system. No catching, intertwining of the cables, towing ropes and shock cords.			
1.6.3	The corrosion protection is undamaged and intact.			

Commissioning Checklist



Motorized Festoons Systems

Series 0380

No.	Description	Remarks	OK	Not OK
2	Inspections on the running system without driven trolleys			
2.1	With 10 % running speed over the whole travel length			
2.1.1	Horizontal alignment gap between the cable trolley and the crane construction is wide enough that no collision can take place with cable trolleys or their components.			
2.1.2	The track beam exhibits no offset at the arm joint transition; festoons roll smoothly across it.			
2.1.3	Check of the loop lengths at the maximum pulled out festoon system corresponds to the project-specific technical documentation.			
2.2	With 50 % running speed over the whole travel length			
2.2.1	Horizontal alignment gap between the cable trolley and the crane construction is wide enough that no collision can take place with cable trolleys or their components.			
2.2.2	The track beam exhibits no offset at the arm joint transition; festoons roll smoothly across it.			
2.2.3	Check of the loop lengths at the maximum pulled out festoon system corresponds to the project-specific technical documentation.			
3	General electrical checks			
3.1	No damage on electrical parts like control cabinets, motors, cables.			
3.2	All screws on electrical control cabinet and motor terminals are tightened.			
3.3	No water is or has been in switch cabinet, junction boxes and at the motor terminals.			
3.4	Fan, heating and light in the switch cabinet is working.			
3.5	Connection of the motor cables in correct order at the terminals in the switch cabinet. Screened cables are installed correctly, the screen is large area terminated.			
3.6	Thermocouples of motors 1 – 3 are working.			
3.7	Limit switches are mounted according to the designed measure and connected according to the circuit diagram.			
4	Test of interface signals on the PLC-block (MCT control is OFF) (Frequency converter and circuit breakers are OFF)			
4.1	Test of landside limit switches by manual simulation with a magnet or by moving of the motorized cable trolley no. 1, 2 and 3 (if installed).			
4.2	Test of waterside limit switches by manual simulation with a magnet or by moving of the motorized cable trolley no. 1, 2 and 3 (if installed).			
4.3	Switch on the main power supply from crane control and check the voltage at the input terminals of the MCT control: The supply voltage is according to the specification.	_____ V		

Commissioning Checklist



Motorized Festoons Systems

Series 0380

No.	Description	Remarks	OK	Not OK
4.4	Switch on the circuit breaker for the power supply of the control voltage transformer. Other circuit breakers are still off; all plugs at the control board of the frequency converter are disconnected! Check the control voltages. <ul style="list-style-type: none"> The AC control voltage is according to the specification. The DC control voltage is according to the specification. 	VAC VDC		
5	Check with the supplier of the crane control			
5.1	Acceleration time of the crane trolley travel is according to the project specification.	_____ s		
5.2	Maximum speed of the crane trolley travel is according to the project specification.	_____ m/min		
6	Commissioning of motorized cable trolley system (Connect all plugs at the control board of the frequency converter and switch on all circuit breakers of the MCT control.)			
6.1	Checking signals from crane to MCT function blocks for trolley 1+2+3			
6.1.1	Check all input signals for each trolley according to the manual.			
6.1.2	Transmitted actual value of the trolley travelling speed is picked off behind the ramp-function generator and scaled by -100 to +100% of the crane travelling speed.			
6.1.3	Direction signals are made directly from the actual value of the crane travelling speed (not from joystick signals or from set point value of crane travelling speed).			
6.1.4	Check transmitted "ACT_POSITION_MAIN_TROLLEY" is according to the manual.			
6.2	Checking signals from MCT function blocks to crane			
6.2.1	Check all output signals for each trolley according to the manual.			
6.2.2	Check if all MCT signals are visible in crane CMS.			
6.2.3	Fault messages are correctly named in the crane CMS.			
6.2.4	Transmitted fault signals from MCT control to crane control are interlocked in the crane control and reduce the crane trolley travelling speed to maximum 50% of crane speed, not more than 120 m/min. Signal „CABLE_TROLLEY_READY“ on trolley 1+2+3: Connection at PLC-BLOCK according to the documentation is ok.			
6.3	Frequency converter check			
6.3.1	Check if you have the project specific parameters on the frequency converter.			
6.3.2	Check that the order numbers of the frequency converter components are identical with the program.			
6.3.3	Measure or calculate the resistance of the cable between motor and frequency drive and correct the value if necessary. Note down the resistance. <ul style="list-style-type: none"> Trolley 1 resistance between motor and motor module: Trolley 2 resistance between motor and motor module: Trolley 3 resistance between motor and motor module: 	_____ Ohm _____ Ohm _____ Ohm		

Commissioning Checklist



Motorized Festoons Systems

Series 0380

No.	Description	Remarks	OK	Not OK
6.3.4	Read motor parameters from nameplate and check the parameters in the frequency converter. If necessary correct the values. Write down the values of trolley 1+2 in this document.	_____ V _____ A _____ kW _____ Hz _____ 1/min		
6.3.5	Read motor parameters from nameplate and check the parameters in the frequency converter. If necessary correct the values. Write down the values of trolley 3 in this document.	_____ V _____ A _____ kW _____ Hz _____ 1/min		
6.3.6	Motor identification of all motors at standstill according to function manual of frequency converter.			
6.3.7	Make a RAM to ROM copy to save the parameters continuously (if required).			
6.4	Safety checks			
6.4.1	Test of limit landside switch control, (1st crane only) of motor 1 + 2 + 3: <ul style="list-style-type: none"> ○ Disconnection of landside limit switch of the respective motor. ○ Moving of main trolley forward over "POS_LIMIT_SWITCH_CHK (Position to check the limit switch (mm))" position. ○ PLC-BLOCK output "FAILURE_LIMIT_SWITCH_POS" on → Automatic reduction of main trolley speed to <= 50 %. Reconnect landside limit switch of the respective motor and reset.			
6.4.2	Test of limit waterside switch control, (1st crane only) of motor 1 + 2 + 3: <ul style="list-style-type: none"> ○ Disconnection of waterside limit switch of the respective motor. ○ Moving of main trolley forward over "POS_LIMIT_SWITCH_CHK (PLC-Festoon parameter - Position to check the limit switch (mm))" position. ○ PLC-BLOCK output "FAILURE_LIMIT_SWITCH_NEG" on → Automatic reduction of main trolley speed to <= 50 %. Reconnect waterside limit switch of the respective motor and reset.			
6.4.3	Test of tooth belt breaking control. (OPTIONAL, only available on selected motorized systems) Test is only necessary for the 1 st crane; adjusted parameters have to be copied to the other identically designed cranes.			

Commissioning Checklist



Motorized Festoons Systems

Series 0380

Checkpoint 6.5 Festoon system function test → Please write ok/not ok in the corr. field.	During the test with 10 % to 100 % the following factors in PLC parameter file have to be fine-adjusted according to the manual. "FACTOR_SPEED_SET_VALUE" „ADD_VALUE_GENERATOR_MODE" ► * before execution of continuous 100 % test first carry out safety checks of point 6.4!					
	10 %	50 %	50 %	100 %	100 %	100 %*
Trolley speed:	Back and forth over the whole travel length	Back and forth over the whole travel length with stop in end pos.	Back and forth over the whole travel length w/o stop in end pos.	Back and forth over the whole travel length w/o stop in end pos.	10 m before end position reverse back to water end position	Continuous test min. 1 h normal + extreme operation
Test movement of festoon system:						
Rotation direction of all motors is the same.	---	---	---	---	---	---
Motorized cable trolleys (MCT) are moving constant and without jerks.						
Limit switch signals will be transferred to the MCT control when the MCT's pass the position of the relevant limit switch.						
Frequency converter will be switched off in water- / landside direction when the relevant water- / waterside limit switch is activated.		---	---	---	---	---
Speed of the motorized cable trolleys results in a constant and smooth pulling / pushing of the complete cable trolley system.						
Motor torque during reversing is sufficient (no motor stall).	---	---				
Remarks:						

Commissioning Checklist



Motorized Festoons Systems

Series 0380

No.	Description	Remarks	OK	Not OK
7	Documentation			
7.1	Upload of the complete frequency parameters and save the file as: YYYY_MM_DD_ORDERNO_fc.zip (Example: 2013_01_31_10512345_sina.zip) <i>For commissioning engineers not located in Weil am Rhein please send the file to service.de@conductix.com</i>			
7.2	Read the complete Wampler PLC-PROGRAM from Main-PLC and save the file as: YYYY_MM_DD_ORDERNO_ku.zip (Example: 2013_01_31_10512345_ku.zip) <i>For commissioning engineers not located in Weil am Rhein please send the file to service.de@conductix.com</i>			
7.3	Updated frequency and PLC software parameters are integrated correctly into the crane PLC Confirmed by: _____ (Name of customer representative, Signature, Date) _____ (Company)			
8	General			
8.1	Personnel instructed in the operation of the system.			