



Festoon System

689 S.W. 7th Terrace Dania, FL 33004 • (954) 921-1171 • Fax (954) 921-7117
Toll Free 1-888-4-A-HOIST (1-888-424-6478)

www.ACIHoist.com

ACI FESTOON CABLE

4 Conductor UL/CSA Festoon Cable (UL) Festoon 600V 105°C -- AWM
CSA Festoon FT1, FT4 (- 40°C to 90°C)

Application:

Designed for power and control applications of crane bridges, gantries, hoists, monorail systems, traveling electrified equipment and other mobile equipment utilizing a cantenary system for cable installation.

Features:

Flat and Flexible Construction Rated for Both Indoor and Outdoor Use Durable Oil Resistant Outer Jacket (UL) VW-1 / CSA FT4 -- Rated -40°C to 105°C.

Cable Construction:

Flexible Stranded Bare Copper Conductors Color Coded Wires (Optional) Flame Retardant and Oil Resistant Outer Jacket. Jacket Color Safety Yellow (Optional) (UL) Festoon 600V 105°C / (UL) AWM 600V 105°C CSA Festoon 600V -40°C to 90°C FT1, FT4.



Technical Details

AC Voltage Rating:	600V/2000V Peak
Temperature Range:	-40°C to 105°C
Conductors:	Fine Stranded TC
Bend Radius:	1.5 X Cable Width

1. GENERAL DESCRIPTION

FESTOON SYSTEMS: Festoon systems support the conductor cables and applications to the crane equipment. The festoon carriers can support large quantities of control, data and optic fiber cables, traveling independently from the mobile machinery with control carriers. Festoon systems are used to electrify various types of mobile equipment. They can support and protect the fiber cables.



Festoon

SPECIFICATIONS:

- The usable saddle width is 2.13 inches on the cable carrier.
- The standard duty C-track material is 14 gauge galvanized or stainless steel.
- The loop depth is the distance from the top of the track to the bottom of the cable loop.
- The loop depth is typically about 3 ft. to 4 ft.

2. SAFETY

2. 1. LOCKOUT/TAGOUT PROCEDURES

When performing inspection, maintenance or repair work on ACI Hoist & Crane equipment, always follow lockout/tagout procedures as required by OSHA 29 CFR Part 1910.147. Lockout/tagout procedures are intended to protect personnel working on or around the equipment by preventing accidental start up or exposure to hazardous energy release such as electrical shocks. Lockout/tagout is the placement of a lock/tag on the energy isolating device in accordance with an established procedure. The procedure requires that individual locks or tags are placed on controls, shutoff switches, valves or other devices to prevent usage until the person who installed the lock or tag removes it. Never attempt to operate any control, switch, valve or other device when it is locked or tagged out.

OSHA required lockout/tagout procedures include:

1. A documented and established site policy on the steps to follow for lockout and tagout such as:
 - A. Notify all affected people including supervisors before lockout or tagout is used.
 - B. Shut off the affected machine, equipment, system or function.
 - C. Disengage, isolate or release energy supply or source.
 - D. Apply individual locks and/or tags on controls, switches, valves or other devices to prevent usage.
 - E. Try or test the machine, equipment or system to check that all the energy has been removed before service or maintenance.
2. Employee training about the facility's lockout/tagout procedures.
3. Identification and location of shutoff switches, controls, valves or other devices that isolate hazardous energy are predetermined at the site facilities.
4. After maintenance and service is finished and each lock and/or tag has been removed by the appropriate individual and all affected people are notified then restore energy or power.

2. 2. WARNINGS AND CAUTIONS

 WARNING 
Warning indicates an imminently hazardous situation which, if not avoided, will or could result in death or serious injury and property damage.

 CAUTION 
Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.

2. 3. ELECTRICAL, OPERATIONAL & MAINTENANCE WARNINGS

Electrical:

- Follow the Lockout/Tagout procedures before any inspection, operation or maintenance is performed.
- Properly ground all of the electrical connectors.
- Do not use the cable for loads greater than the recommended voltage and current rating.

Operational:

- Mounting hardware and fasteners should be installed to insure tightness under vibration.
- Maintain safety when handling the festoon system during normal operation.
- Do not use any cable other than that which the system is designed for. A change in the diameter, weight per foot, length or flexibility of cable will affect the operation of the crane.

Maintenance:

- Modification of the equipment can cause excessive wear and will void the warranty.

3. QUALIFIED OPERATORS

Only the following personnel should be permitted to operate lifting equipment after reading this manual:

- Appointed **Qualified** operators only.
- Qualified maintenance and test personnel.
- Qualified crane inspectors.

Operator Tests: Every employer should require that all personnel who will be authorized to operate lifting equipment must first pass an examination which accurately measures practical knowledge of cranes and hoist and proper methods to be used in attaching loads and operating the lift equipment.

Physical and Mental Conditions:

- An operator must possess good hearing, good vision (corrected or uncorrected), good depth perception especially where load spotting is critical or at some distance from the operator.
- An operator must not have any known health condition or disability which could cause inability to react quickly.
- An operator who is taking medication prescribed by a doctor must present written assurance from his doctor that the medication will not affect the operators' ability to operate the hoist or crane in a safe manner.
- An operator who is known or suspected to be under the influence of drugs or alcohol must not be allowed to operate a hoist or crane.
- The operator must be safe at all times.



4. INSTALLATION

Standard Duty C-Track Festoon Systems are light duty systems designed for hoist and crane systems with lighter duty cycles.

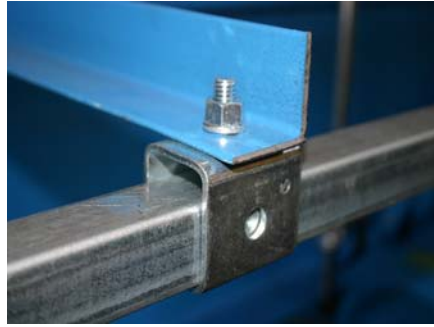
NOTE:

Installation MUST be performed by a qualified person in accordance with Material Handling Systems. Severe injury, death and/or property damage can result if the festoon system is not correctly installed. For service in this area, please contact:

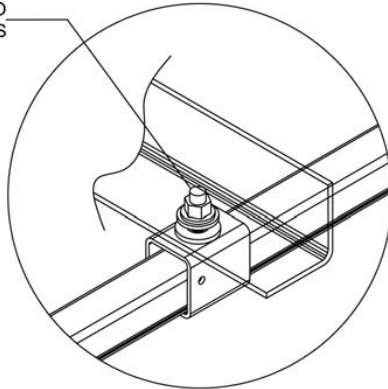
**Material Handling Systems, Inc.
689 S.W. 7th Terrace
Dania, FL 33004
Phone: 954-921-1171
Fax: 954-921-1771**

 WARNING 
Working in or near exposed energized electrical equipment presents the danger of electric shock.
TO AVOID INJURY: Disconnect power and lockout/tagout disconnecting means before installing crane or runway.

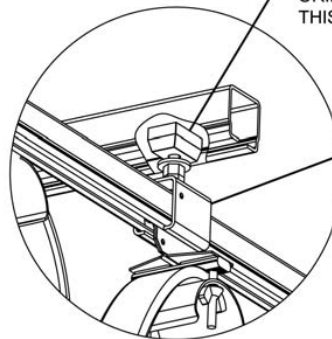
4. 1. TRACK HANGER



TORQUE NUT TO
30 FT-LBS



ORIENT BLOCK LIKE
THIS INSIDE C-TRACK

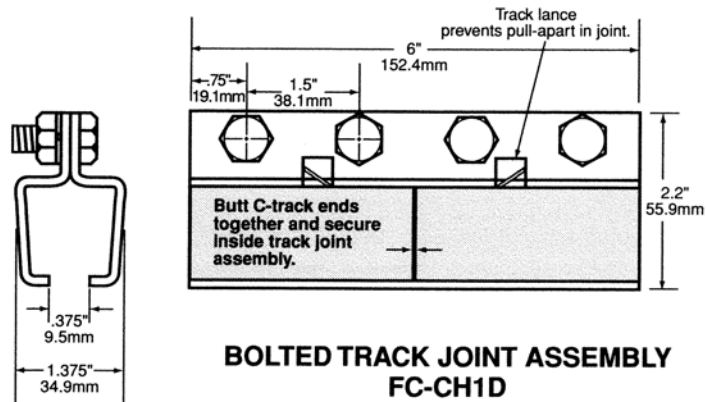


TRACK HANGER FOR
USE WITH STANDARD
C-TRACK CROSS ARM
SUPPORT

4. 1. 1. The track hanger is designed to be mounted on the angle iron brackets with one mounting hole.
4. 1. 2. One track hanger is required for each cross arm support bracket. Run each track at 5' ft. spacing.
4. 1. 3. Slip the appropriate amount of hangers on each section of C-Track.
4. 1. 4. Bolt the section loosely in place, joining the ends of the channels with splice joints as you progress.

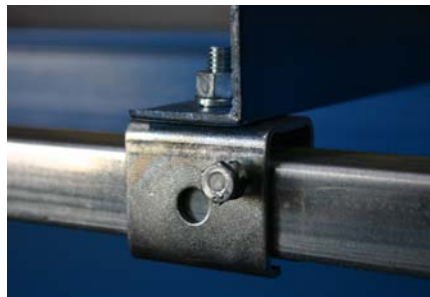
4. 2. INSTALL C-TRACK

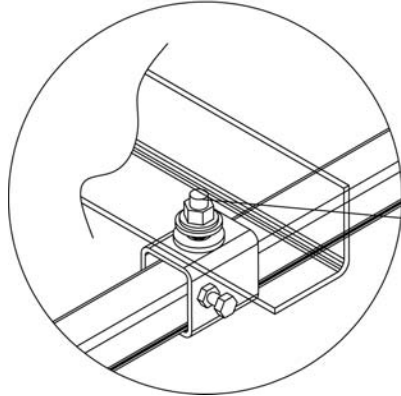
Slide C-Track sections into hanger clamps. Butt C-Track together and secure with track joint clamps. Firmly tighten joint clamp bolts and hanger clamping bolts, making sure that the track is straight. Curved sections must be welded to straight sections with the supplied welding sleeve.



4. 3. ANCHOR CLAMP

- 4. 3. 1. Anchor clamps are designed to hold the track in place while allowing free expansion of the system due to temperature changes.
- 4. 3. 2. One anchor clamp is required per run and should be placed as close to the center of the system as possible.
- 4. 3. 3. In the center of the system, place an anchor clamp instead of a Track hanger clamp to anchor the system.





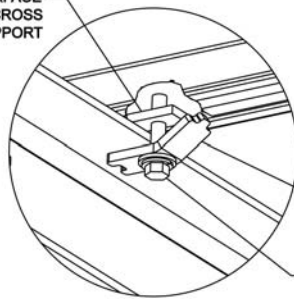
TIGHTEN SCREW UNTIL IT CONTACTS C-TRACK, THEN TURN $\frac{1}{4}$ PAST TO ENSURE CLAMPING. TIGHTEN NUT DOWN TO 12 FT-LBS TO LOCK BOLT INTO PLACE. OVERTIGHTENING SCREW WILL CAUSE CLAMP TO SPREAD APART AND CAUSE C-TRACK TO LOSE SUPPORT AND POSSIBLY FALL OUT.

4. 4. Girder Clamp

- 4. 4. 1. The girder clamps are designed to hold the cross arm supports to the I-beam.
- 4. 4. 2. Use of two girder clamps are necessary to support the cross arms.



ORIENT SQUARE NUT TO NEST FLUSH AGAINST INSIDE BOTTOM SURFACE OF C-TRACK CROSS ARM SUPPORT

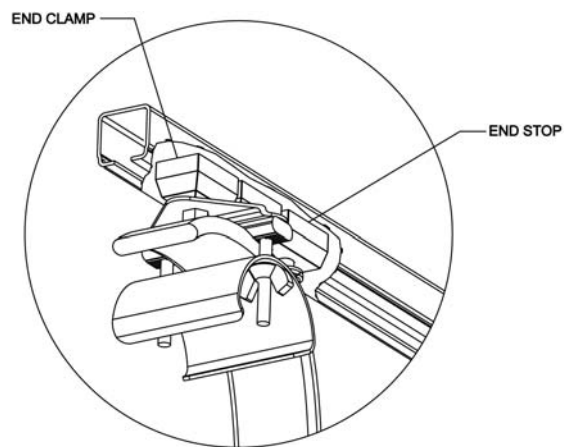


GIRDER CLAMP TAB CENTERED WITH OPENING IN C-TRACK CROSS ARM SUPPORT

TIGHTEN UNTIL CLAMP IS FLUSH WITH I-BEAM & CROSSARM IS SECURED.

4. 5. End Clamp

- 4. 5. 1. The end clamp is the stationary component of the festoon system and will not move.
- 4. 5. 2. Install the end clamp assembly at the far end of the fixed end of the C-Track and tighten the fasteners.
- 4. 5. 3. Typically only one is required per festoon system.



4. 6. Cable Trolley

- 4. 6. 1. The cable trolley rolls inside the C-Track and carries the electrical cable down the track.
- 4. 6. 2. Securely locate the channel and then install the carriers into the slot of the C-Track. Place all trolleys into the C-Track.



⚠ WARNING ⚠

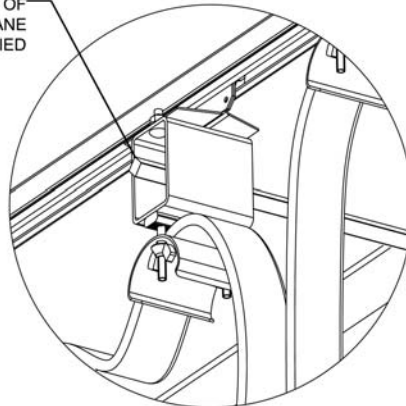
DO NOT install trolley in the C-Track until all hangers and splices are securely fastened to the recommended torque.

4. 7. Tow Trolley / Control Box Trolley

- 4. 7. 1. The tow trolley is the first cable carrier at the mobile end of the power festoon system.
- 4. 7. 2. The tow trolley attaches to the crane power consumer by the tow arm.
- 4. 7. 3. The control box trolley is the first mobile carrier at the mobile end of a control festoon system.
- 4. 7. 4. The control box trolley consists of a mobile junction box or a quick disconnect connector to which a pushbutton pendant can be wired.
- 4. 7. 5. The tow trolley / control box trolley should be placed into the slot of the C-Track.

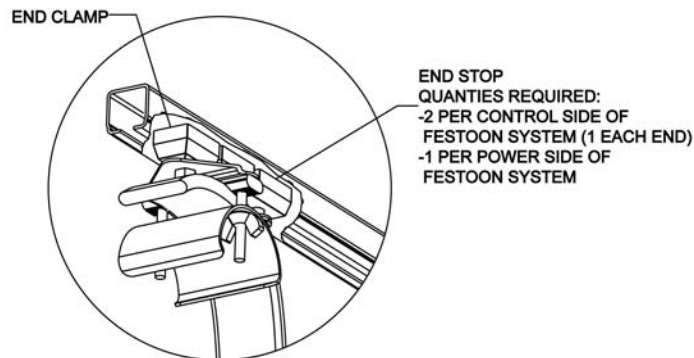


TOW BAR SHOULD BE CENTERED
TOP TO BOTTOM IN TOW BOX,
THIS ALLOWS FOR A FREE RANGE OF
MOVEMENT FOR THE CRANE
OR SYSTEM THAT IS BEING ELECTRIFIED



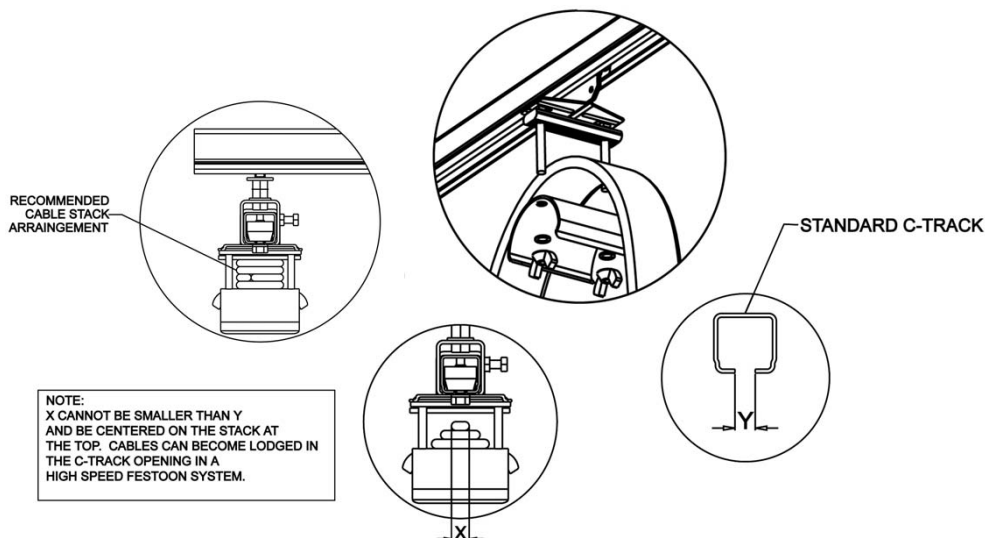
4. 8. End Stop

- 4. 8. 1. One end stop is required per power festoon systems. Two end stops are required per control festoon systems, including a control trolley to stop the trolley from rolling out of the C-Track.
- 4. 8. 2. Install and tighten the end stop(s) and end clamp firmly in place.



4. 9. Cables

- 4. 9. 1. Arrange the cables with the larger cable on the top of the stack. This provides a larger bending area as well as improved heat dissipation. Since the top cable also takes more pulling force during operation, the larger conductor is better suited to handle this force.
- 4. 9. 2. Arrange the cable package with a width to height ratio.
- 4. 9. 3. Arrange the cables with a minimum of 50 % of each cable surface under clamp pressure.
- 4. 9. 4. Install the tow webbing if required.
- 4. 9. 5. After setting the cables to the proper loop depth and arranging the cables as designed, re-install the cable clamping pad assemblies.
- 4. 9. 6. Make sure the smallest cables DO NOT move when pulled.



⚠ WARNING ⚠

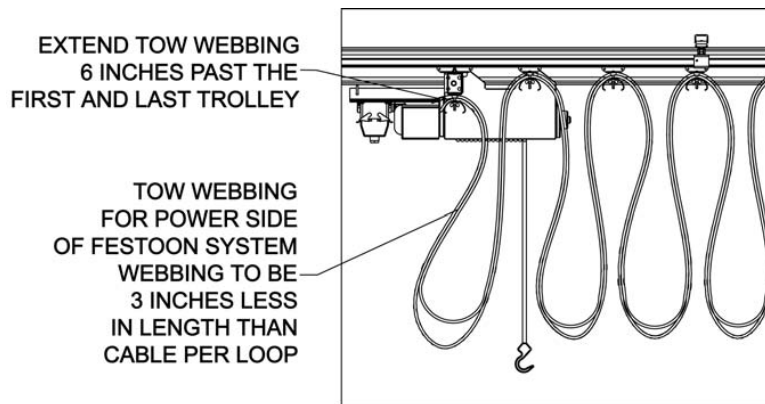
Before beginning the installation of cables, remove the cable clamping pad assemblies from the tow trolley, trolleys and end clamp.

⚠ WARNING ⚠

Tall narrow cable stacks can be unstable during operation.

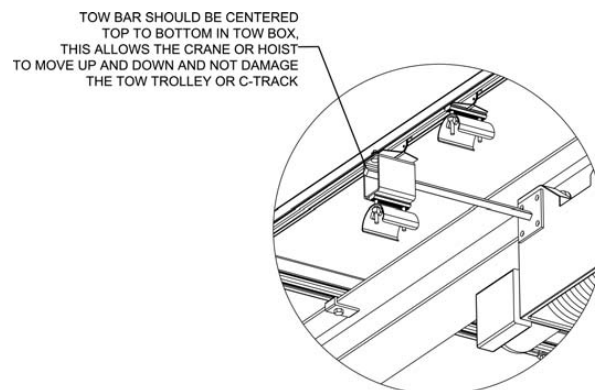
4. 10. Tow Webbing (Not necessary on all systems)

4. 10. 1. Tow webbing is used to reduce the shock and pulling tension on the electrical cable.
4. 10. 2. Install the tow webbing on the top of the electrical cable and hold in place with the saddle on the cable trolley.



4. 11. Tow Bar

4. 11. 1. The tow bar is fixed to the crane and is designed to engage the tow box so it can move the festoon system.
4. 11. 2. Install the tow bar on the crane or the system that is to be electrified.
4. 11. 3. Center and align the tow bar with the tow trolley.



4. 12. Instructions for Pre-Assembled Festoon Systems

- 4. 12. 1. Upon arrival, inspect the festoon system to ensure that the electrical cables and festoon system components have not been damaged during transit.
- 4. 12. 2. Attach hoisting cables at each end of the festoon C-Track and lift into position. The C-Track must be aligned correctly.
- 4. 12. 3. Remove the end stop from the mobile end of the temporary C-Track and roll the tow / control box trolley and succeeding cable trolleys into the permanent C-Track.
- 4. 12. 4. Make all mechanical connections of the tow arm, insuring that the end stops are applied and tightened.
- 4. 12. 5. Make all electrical connections as required.

5. OPERATION AND INSPECTION

5. 1. Installation: The first step to be taken before an inspection procedure is started is to inform all personnel that the equipment is being removed from operation and to secure all lockout/tagout procedures. Failure to strictly follow this warning may lead to the injury or death of personnel. SEE LOCKOUT/TAGOUT PROCEDURES before proceeding with inspections.

5. 2. Pre-Operation Inspection

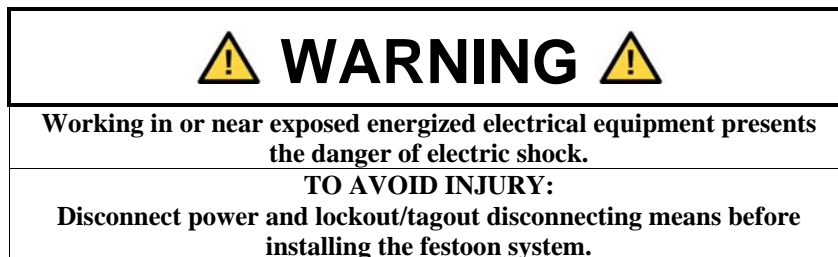
- 5. 2. 1. Once the festoon system is installed. Prior to the power hookup, the carrier should be cycled manually, if applicable.
 - 5. 2. 1. 1. Check for proper mounting of the end clamps.
 - 5. 2. 1. 2. Check for obstructions of the channel joints.
 - 5. 2. 1. 3. Check cable for proper loop depth, stretch-out and travel clearance.
- 5. 2. 2. Check the pendant systems for proper spacing of the pendant to the floor. Connect this cable in the control box.
- 5. 2. 3. Connect the cable connections to the power unit and the source, using the appropriate cable strain relief bushing(s).

5. 3. Operation Instructions

- 5. 3. 1. DO NOT exceed the voltage or amperage rating of the festoon cable.



- 5. 3. 2. Operate the festoon system only within the electrical and mechanical limits it is intended.



6. MAINTENANCE

6. 1. Maintenance Instructions

6. 1. 1. All trolleys are lubricated and sealed for life, therefore no re-greasing is required. However, customers should conduct periodic inspections of the system. Determine the inspection intervals by the duty cycles and environment in which the system is installed.

Recommendations for the inspections:

- Check cable clamps on all trolleys.
- Check tightness of all equipment.
- Check all rollers for wear.
- Check channel for wear.
- Check and clear all debris from the running surface of the channel.
- Check the cable for any cuts or cracks.

 WARNING 

Working in or near exposed energized electrical equipment presents the danger of electric shock.

TO AVOID INJURY:

Disconnect power and lockout/tagout disconnecting means before installing crane or runway.
