DANGER, WARNING, CAUTION, and NOTE Statements

DANGER, WARNING, CAUTION, and Note statements are used throughout this manual to emphasize important and critical information. You must read these statements to help ensure safety and to prevent product damage. The statements are defined below.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTE: A NOTE statement is used to notify people of installation, operation, programming, or maintenance information that is important, but not hazard-related.
I-Beam Festoon System Installation Instructions

General Considerations

1. I-Beam systems are designed to festoon flat cables using a 3”, 4” or 6” American Standard I-Beam as the trolley runway. They are appropriate for higher duty applications. Trolleys are capable of supporting loads up to 250 lbs.

2. Determine the length of the span to be festooned. Consideration should be given to the impact of the storage distance (stack up) on the actual travel distance of the moving equipment, and the speed at which the system will run.
   a. To determine storage/stack up area, multiply length of trolley by the number of trolleys. (i.e. 9” long trolley x 10 trolleys = 90”)
   b. *For systems with speeds of 250 feet per minute or more, consult the factory, as tow cables/chains may be required.*

3. Determine the desired loop depth. A 3-foot loop depth is common. A deeper loop depth requires fewer trolleys and reduces the storage (stack up) distance.

4. Select the proper Flat Cable which meets or exceeds the electrical requirements of the application, based upon the amperage and conductors required. The total number of control wires should include one common and one ground. Additional wires may be required for brakes, limit switches, or other devices when controls are mounted remotely from their motors.
   a. The length of cable required is: the sum of the length of system to be festooned, plus approximately 20% for cable sag, plus the distance to the power source.
   b. Calculate total weight for cable per trolley to ensure that a maximum of 250 lbs. per trolley is not exceeded—see cable specifications on page 5. Cables may be stacked in the saddle as long as the maximum weight per trolley is not exceeded.

5. Determine the number of trolleys required by dividing the length of the run by the total amount of cable required for one loop (i.e. A 3 foot loop depth requires 6 feet of cable). The number of intermediate trolleys will be reduced by (1) to account for a lead/tow trolley or control box trolley.

6. Determine the junction box size and terminal strips required for the amount of conductors being festooned from the power source and/or the control box trolley. Cable grips are available for terminating cable in various sizes and for multiple cable accommodations.
Standard I Beam Festoon Configuration

**Figure 1**

**Standard System Components for 3”-4” I-Beam**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Page Number</th>
<th>*Tech Bulletin #</th>
</tr>
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<tbody>
<tr>
<td>F-ICTA</td>
<td>Tow Arm (heavy gauge steel)</td>
<td>6</td>
<td>FS-19</td>
</tr>
<tr>
<td>F-ICE</td>
<td>End Clamp</td>
<td>6</td>
<td>FS-16</td>
</tr>
<tr>
<td>F-IC3T</td>
<td>Tow Trolley</td>
<td>7</td>
<td>FS-14</td>
</tr>
<tr>
<td>F-IC3</td>
<td>Trolley (nylon saddle, plated steel)</td>
<td>8</td>
<td>FS-11</td>
</tr>
<tr>
<td>F-IC3B</td>
<td>Control Box Trolley (plated steel)</td>
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<td>FS-13</td>
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</table>

**Standard System Components for 6” I-Beam–Heavy Duty**

<table>
<thead>
<tr>
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<th>*Tech Bulletin #</th>
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<td>FS-110</td>
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<tr>
<td>F-IC9</td>
<td>Trolley (nylon saddle, plated steel)</td>
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<td>FS-113</td>
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<td>End Clamp</td>
<td>11</td>
<td>FS-113</td>
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<tr>
<td>F-IC13</td>
<td>Trolley (nylon saddle, plated steel)</td>
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<td>FS-115</td>
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<td>F-IC13T</td>
<td>Control Box Trolley (plated steel)</td>
<td>12</td>
<td>FS-114</td>
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</table>

*Junction Boxes/Terminal Strips/cable grips also available—please consult factory*

* For your reference technical bulletins for most components maybe requested by calling the factory or are available online at www.electromotive.com under the “Support” section under Festoon Systems and Cable.*
Installation Procedures (refer to drawing–figure 1, page 3)

1. Insert the Lead/Tow Trolley or Control Box Trolley and Intermediate Cable Trolleys onto existing I-Beam–make sure all trolleys roll freely.

2. Install the End Cable Clamp assembly onto the I-Beam at the storage end. Tighten securely.

3. Install an End Stop (manufactured elsewhere) on the end of the I-Beam, opposite the storage end.

4. Loosen the saddle hex nuts (do not remove hex nuts) on the trolleys/end clamp/tow trolley saddles. Feed the festoon cables into the trolleys between the clamping pad and saddle. Make sure to leave enough cable past the Tow/Lead Trolley or Control Box Trolley to wire into the enclosure. Measure the desired loop depth and tighten the saddle hex nuts to secure the festoon cables.

   **NOTE:** For speeds in excess of 250 feet per minute, tow cables/chains and bumpers may be required.

5. Install festoon cable grips into approved junction boxes and insert cables through the cable glands. Tighten cable grip nuts firmly to secure cables.

6. For power & control applications, install the Tow Arm in the center of the rectangular box mounted on the Tow/Lead Trolley. The Tow Arm should be securely fastened to the moving equipment to be electrified.

7. For traveling pendant pushbutton applications, install the junction box on the Control Box Trolley. Fasten securely with hardware furnished.

8. Run the completed festoon system back and forth several times over the entire system to ensure proper operation. Flat festoon cables should extend and retract in a straight line if the cables have been properly fastened to the trolleys.
6” I-Beam Flat Festoon Cables and Trolleys—Engineering Data

Trolley Specifications
- Standard trolley frames are zinc gold dichromated steel.
- Standard trolley main wheel ball bearings are precision ground, sealed and available with permanently lubricated or re-greaseable ball bearings. Anti-lift roller ball bearings are un-ground and permanently lubricated with closed races.
- Standard trolley is designed to ride on an S6 I-beam with a flange width of 3.332”-3.565”.
- Standard trolley is equipped with rubber bumpers on each end of the trolley and is available in two sizes, 9” long and 13” long.
- Stainless Steel Trolleys and Trolleys with regreasable wheels and grease fittings are also available—please consult factory.

Cable Saddle Limitations
- Trolley for 3” or 4” I-Beam has a 3” diameter cable saddle with a maximum window opening of 1” X 2¼” which will accommodate multiple flat cables listed below, including the F-2/4 cable.
- Trolley for 6” I-Beam has a 6” diameter cable saddle with a maximum window opening of 3½” X 4” which will accommodate multiple flat cables listed below, including the F-2-4 cable.

Flat Festoon Cable Reference—Standard Cable Specifications
- Indoor/Outdoor Festoon flat cable and round pendant control cable
- 105°C (221°F) 600 volt AC, 250 volt DC
- Conductors are annealed copper
- Each conductor has color coded jacket
- Jacket rating -40°C (-40°F) to 105°C (221°F)
- Resistant to UV, ozone, water, oil and weather
- 4, 8, or 12 conductor flat cable
- #2 AWG through #16 AWG flat cable

<table>
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<tr>
<th>Part No.</th>
<th>AWG Size</th>
<th># of Cond.</th>
<th>Dimensions (Inches)</th>
<th>Ampacity*</th>
<th>Approximate lbs/MFT</th>
<th>Bend Radius (in.)</th>
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<tr>
<td>F-16/8</td>
<td>16</td>
<td>8</td>
<td>0.200 X 1.110</td>
<td>14</td>
<td>194</td>
<td>0.80</td>
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<tr>
<td>F-16/12</td>
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<td>12</td>
<td>0.200 X 1.605</td>
<td>14</td>
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<td>F-14/4</td>
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*Ampacities are de-rated at higher temperatures (above 30°C).
Minimum Bending Radius (approx. 4 X cable thickness)
Specialty cable also available—contact the factory for more information
Cable available in specific lengths or in Full Reels of 500 or 1000 feet
Round pendant cable available in #16 AWG with 8, 12, 16, 24 or 36 conductors
I-Beam (3”–4” I-Beam) Tow Arm Assembly/Cable Saddle Assembly

Figure 2

F-ICTA  I-Beam (3”–4” I-Beam) Tow Arm/Cable Saddle Assembly
F-ICTA-SS  I-Beam (3”–4” I-Beam) Stainless Steel Tow Arm/Cable Saddle Assembly

3.25 Lbs./Ft.

I-Beam End Cable Clamp–3” or 4” I-Beam

Figure 3

F-ICE  I-Beam End Cable Clamp (3”–4” I-Beam)
F-ICE-SS  I-Beam End Cable Clamp–Stainless Steel

3.50 lbs./ea.
I-Beam Tow Trolley (3” & 4” I-Beam)

Figure 4

F-IC3T  I-Beam Tow Trolley (3” & 4” I-Beam)
F-IC3T-SS  I-Beam Tow Trolley (3” & 4” I-Beam)–Stainless Steel
4.75 lbs./ea.
I-Beam Trolley

Figure 5

F-IC3 I-Beam Trolley (3” & 4” I-Beam)
F-IC3-SS I-Beam Trolley (3” & 4” I-Beam) stainless steel
3.50 lbs./ea.

I-Beam Trolley with Bumpers

Figure 6

F-IC3-B I-Beam Trolley with Bumpers (3” & 4” I-Beam)
4.10 lbs./ea.
I-Beam Control Box Trolley (3” or 4” I-Beam)

Figure 7

F-IC3B  I-Beam Control Box Trolley (3” & 4” I-Beam)
F-IC3B-SS  I-Beam Control Box Trolley–Stainless Steel
3.50 lbs./ea.

Heavy Duty Duty Trolley (6” I-Beam)

Figure 8

F-IC9  Heavy Duty I-Beam Trolley (6” I-Beam)
Regreasable wheels with grease fittings–add suffix “-G”
13.00 lbs./ea.
Heavy Duty I-Beam Tow Trolley (6” I-Beam)

F-IC9T Heavy Duty I-Beam Tow Trolley (6” I-Beam)
Regreasable wheels with grease fittings (add suffix “-G”)
13.00 lbs./ea.

Heavy Duty I-Beam (6” I-Beam) Tow Arm Assembly/Cable Saddle Assembly

F-ICTA13 Heavy Duty I-Beam (6” I-Beam) Tow Arm/Cable Saddle Assembly
6.25 lbs./ea.
Heavy Duty I-Beam (6” I-Beam) End Cable Clamp

![Figure 11](image)

F-ICE13  Heavy Duty I-Beam (6” I-Beam) End Cable Clamp
6.50 lbs./ea.

Heavy Duty I-Beam Trolley (6” I-Beam)

![Figure 12](image)

F-IC13  Heavy Duty I-Beam Trolley (6” I-Beam)
Regreaseable wheels with grease fittings (add suffix “-G”)
19 lbs./ea.
Heavy Duty I-Beam Tow Trolley (6” I-Beam)

Figure 13

F-IC13T  Heavy Duty I-Beam Tow Trolley (6” I-Beam)
Regreasable wheels with grease fittings (add suffix “-G”)
20.00 lbs./ea.