

*I-Beam Festoon*

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# Instruction Manual

ELECTROMOTIVE SYSTEMS

a  **Magnetek Company**

7/1/02

Part Number: 125-10030

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## ***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

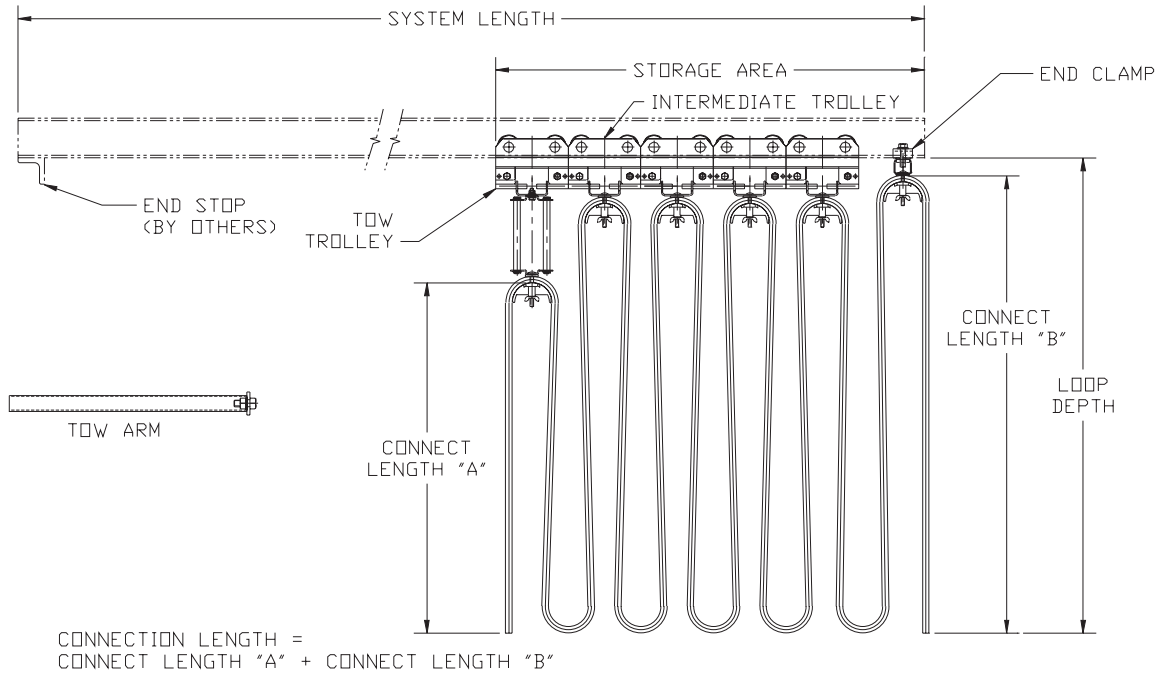


Figure 1

## Standard System Components for 3"-4" I-Beam

Part No.	Description	Page Number	*Tech Bulletin #
F-ICTA	Tow Arm (heavy gauge steel)	6	FS-I9
F-ICE	End Clamp	6	FS-I6
F-IC3T	Tow Trolley	7	FS-I4
F-IC3	Trolley (nylon saddle, plated steel)	8	FS-I1
F-IC3B	Control Box Trolley (plated steel)	9	FS-I3

## Standard System Components for 6" I-Beam—Heavy Duty

Part No.	Description	Page Number	*Tech Bulletin #
F-ICTA13	Tow Arm (heavy gauge steel)	10	FS-I10
F-IC9	Trolley (nylon saddle, plated steel)	9	FS-I3
F-IC9T	Tow Trolley	10	FS-I13
F-ICTA13	Tow Arm	10	FS-I10
F-ICE13	End Clamp	11	FS-I13
F-IC13	Trolley (nylon saddle, plated steel)	11	FS-I5
F-IC13T	Control Box Trolley (plated steel)	12	FS-I14

*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 on-line at [www.electromotive.com](http://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 regreaseable 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

Part No.	AWG Size	# of Cond.	Dimensions (Inches)	Ampacity*	Approximate lbs/MFT	Bend Radius (in.)
F-16/8	16	8	0.200 X 1.110	14	194	0.80
F-16/12	16	12	0.200 X 1.605	14	292	0.80
F-14/4	14	4	0.210 X 0.625	27	138	0.84
F-14/8	14	8	0.210 X 1.175	19	254	0.84
F-14/12	14	12	0.210 X 1.700	19	380	0.84
F-12/4	12	4	0.230 X 0.710	33	180	0.92
F-12/8	12	8	0.230 X 1.340	23	343	0.92
F-10/4	10	4	0.270 X 0.880	44	239	1.08
F-8/4	8	4	0.365 X 1.190	60	401	1.46
F-6/4	6	4	0.430 X 1.450	82	620	1.72
F-4/4	4	4	0.490 X 1.690	104	896	1.96
F-2/4	2	4	0.560 X 1.955	142	1278	2.24

\*Ampacities are de-rated at higher temperatures (above 30°C).

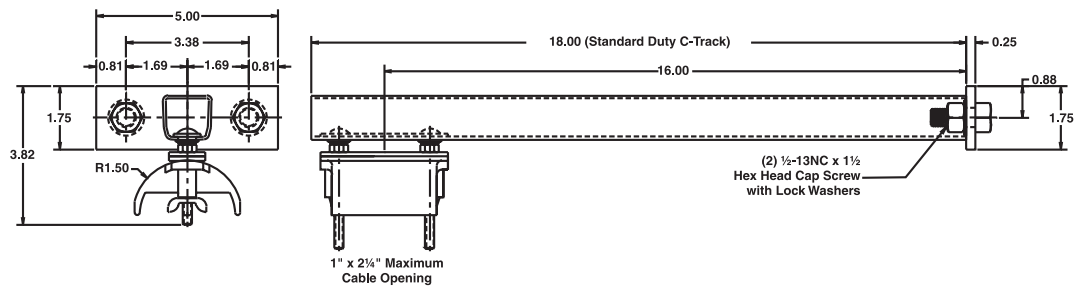
Minimum Bending Radius (approx. 4 X cable thickness)

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

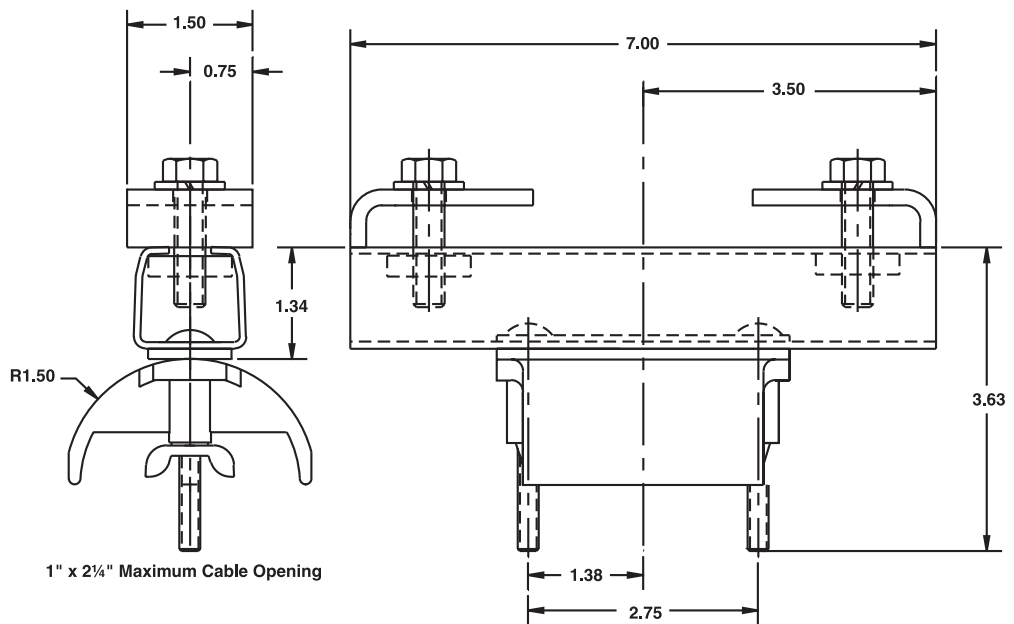
## I-Beam (3"-4" I-Beam) Tow Arm Assembly/Cable Saddle Assembly



**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.

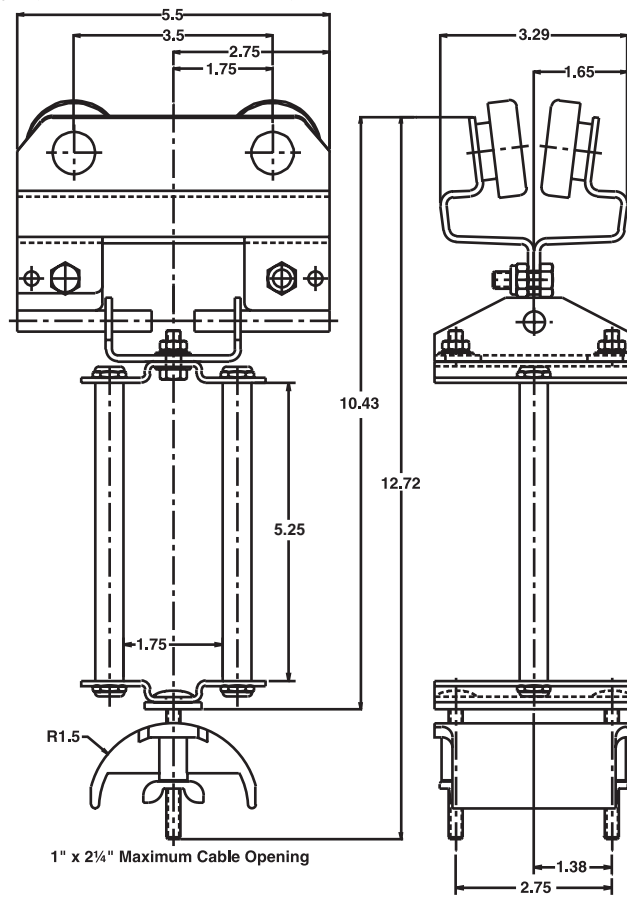
## I-Beam End Cable Clamp-3" or 4" I-Beam



**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)

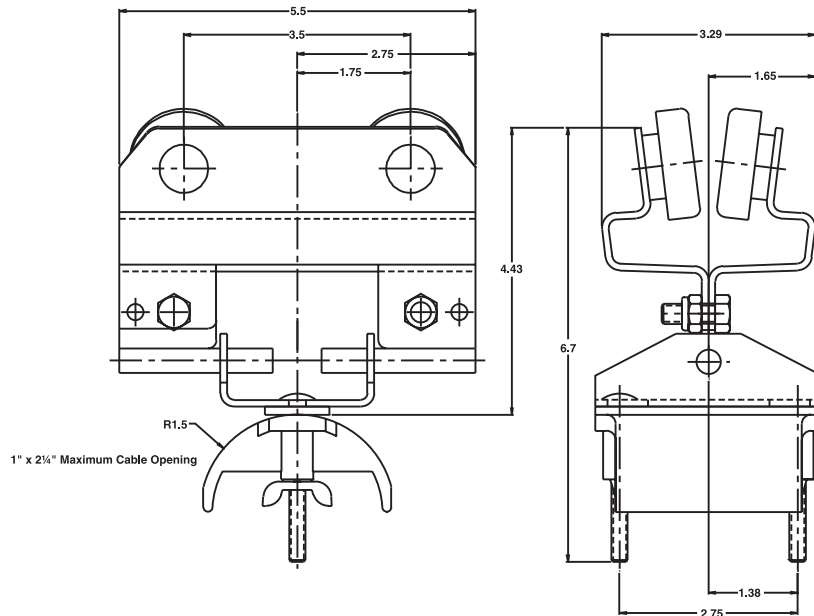


**Figure 4**

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.



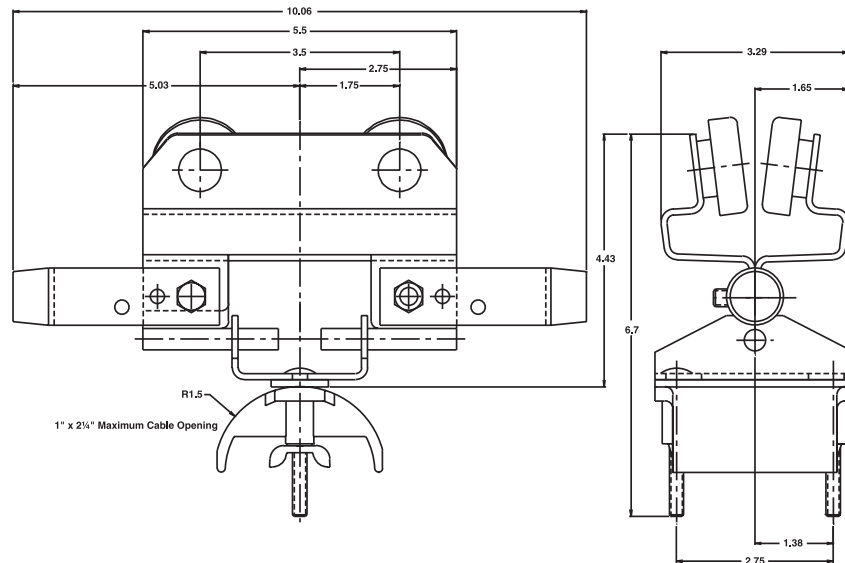
## I-Beam Trolley



**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.

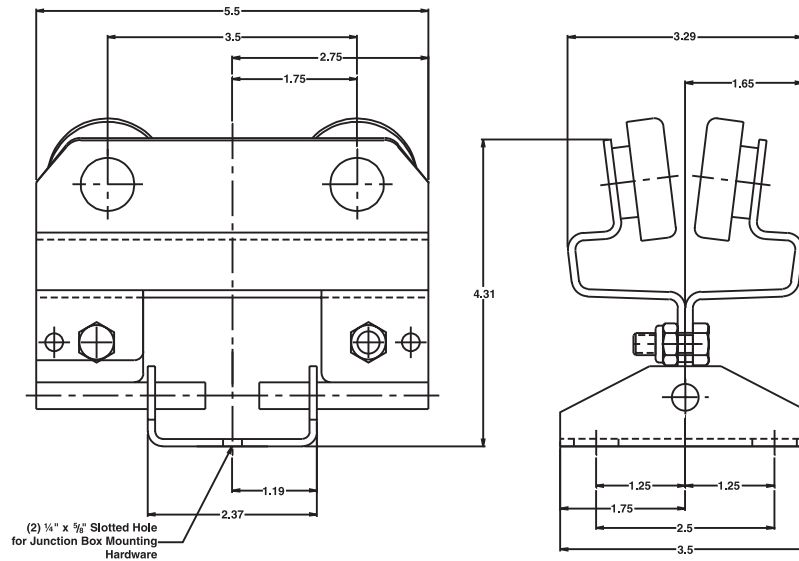
## I-Beam Trolley with Bumpers



**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)



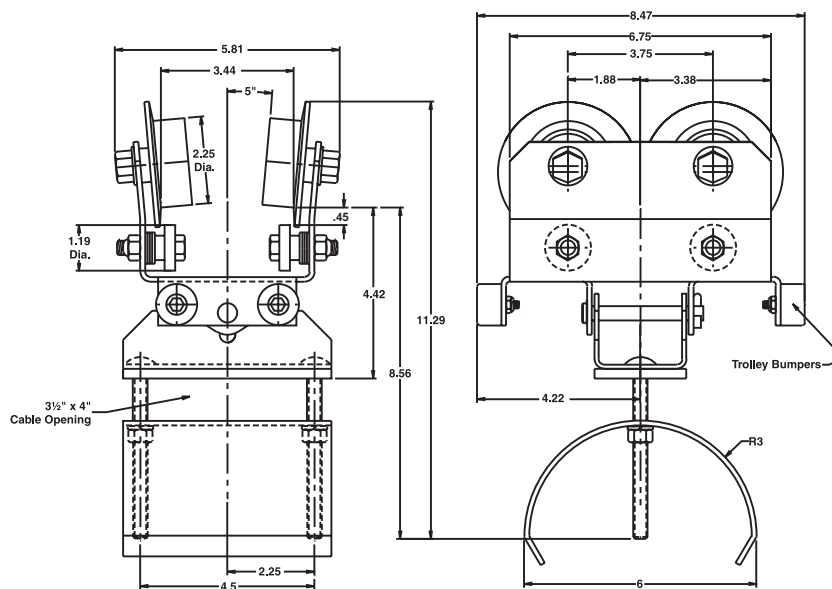
**Figure 7**

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 Trolley (6" I-Beam)



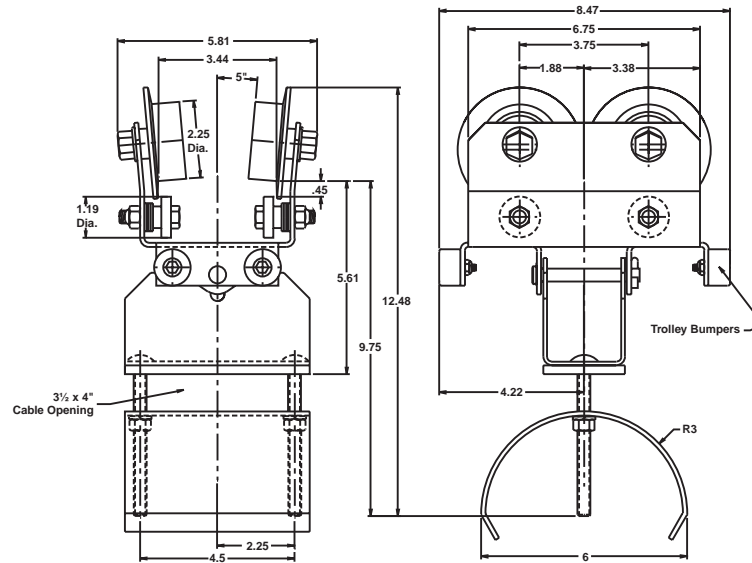
**Figure 8**

F-IC9 Heavy Duty I-Beam Trolley (6" I-Beam)

Regreaseable wheels with grease fittings-add suffix "-G"

13.00 lbs./ea.

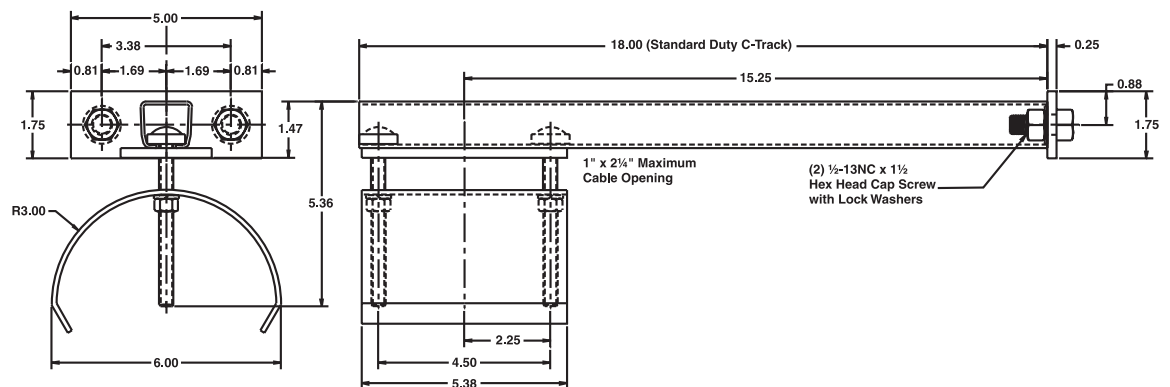
## Heavy Duty I-Beam Tow Trolley (6" I-Beam)



**Figure 9**

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



**Figure 10**

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



