SENTRYWAY®

VIDEOSURVEILLANCE SYSTEMS

CurveTrack®

System Installation Guide

CT V2 001

SENTRYWAY
Les Carrés du Parc
10 rue des Rosiéristes
69410 Champagne au Mont d'Or

CurveTrack®
System Installation Guide

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Phone : 06 64 78 59 57 - Website : www.sentryway.com

CAUTION

It is essential that safety precautions noted throughout this manual be followed along with OSHA Safety Standards and local electrical codes at the installation site. To prevent personal injury, use the safety equipment specified in the Recommended Tool list elsewhere in this manual.

NOTICE TO USERS

SENTRYWAY reserves the right to modify the contents of this manual at any time. Sentryway shall not be held liable for errors contained herein or for incidental or consequential damages in connection with furnishing, performance, or the use of material in this manual.

Table of Contents

1. Introduction

Sentryway has designed and built this state-of-the-art Closed Circuit Television (CCTV) Traveling Camera System using the finest materials and components available. The CurveTrack® consists of a CCTV camera, with pan, tilt, and zoom capability, which moves along a rail on a carriage concealed from view within a transparent, mirrored enclosure. The carriage is not tethered to any power or video cables. Because the camera moves on a rail, line-of-sight and blind spot issues are eliminated and total coverage can be achieved using fewer cameras.

The CurveTrack® camera provides a continuous, high resolution, real-time, moving video picture while remaining hidden. The system can be operated in automatic or manual modes. An on-site system operator can easily tilt, pan, zoom, and focus the camera to monitor specific areas and follow activity.

Of primary importance is the fact that individual CurveTrack® systems can be accessed remotely via the internet. This capability enables, for instance, corporate headquarter's personnel to observe and monitor on-going operations at multiple facilities in real time. Management can maintain total control over display, pricing, and stocking of merchandise while ensuring compliance with all operational directives and procedures.

The instructions presented in this manual are intended for technicians and comprise the recommended installation procedures for all components of the CurveTrack® system. Operating instructions for the system are contained in a separate User's Manual available from Sentryway

Quiet, long lasting, trouble – free operation of the CurveTrack® system is dependent upon proper installation of all components. It is imperative that installation technicians read and understand this manual thoroughly before beginning an installation. Installers must use good judgment when slight deviations from these instructions are called for.

1.1 Explanation of symbols

The Exclamation Mark  is used as a general safety alert. Read and follow instructions carefully when this symbol appears.

NOTE

A Note is a specific fact or time– saving tip that, if not followed, could affect the performance of the associated procedure.

CAUTION

A Caution is present when failure to properly perform a particular action or procedure could cause serious equipment damage or cost considerable time to correct. Complying with a Caution can help to prevent serious trouble.

DANGER

A Danger statement is used to alert the user to the existence of the potential for serious bodily injury or death. Information presented under the Danger symbol MUST BE ACTED UPON.

1.2 Technical specifications

Supplier's name and address :	Sentryway - Les carrés du parc - 10 rue des Rosiéristes 69410 Champagne-au-Mont-d'Or FRANCE
Model or Type :	CurveTrack®
Electrical rating :	
Input 1 Power Chassis	100-240VAC; 3A; 50-60Hz
Input 2 & 3 RF Modem & Video Demodulator	100-240VAC; 0.33 - 0.19A; 50-60Hz
Atmospheric Specifications	
Operating	
Temperature	32 to 104 degrees F (0 to 40 degrees C)
Humidity	L. T. 30 to 75% 10-90% non condensign
Atmospheric pressure	700HPa to 1060HPa
Storage	
Temperature :	-10 to +60 degrees Centigrade
Humidity :	0 to 95%, condensation should not occur
Atmospheric pressure :	500HPa to 1060HPa
Mode of operation :	Continuous
Classification :	Class I
Type :	N/A
User accessible fuses :	
External IEC Module	T3.15AH, 250V
Output:	No accessible outputs
Protective Earth terminals :	Internal connections marked ⏚ No external connections
CE Contact's name and address :	Supplied on request
CE Contact's telephone number :	Supplied on request

1.2.1 Physical dimensions of the camera carriage (see figure 1-1)

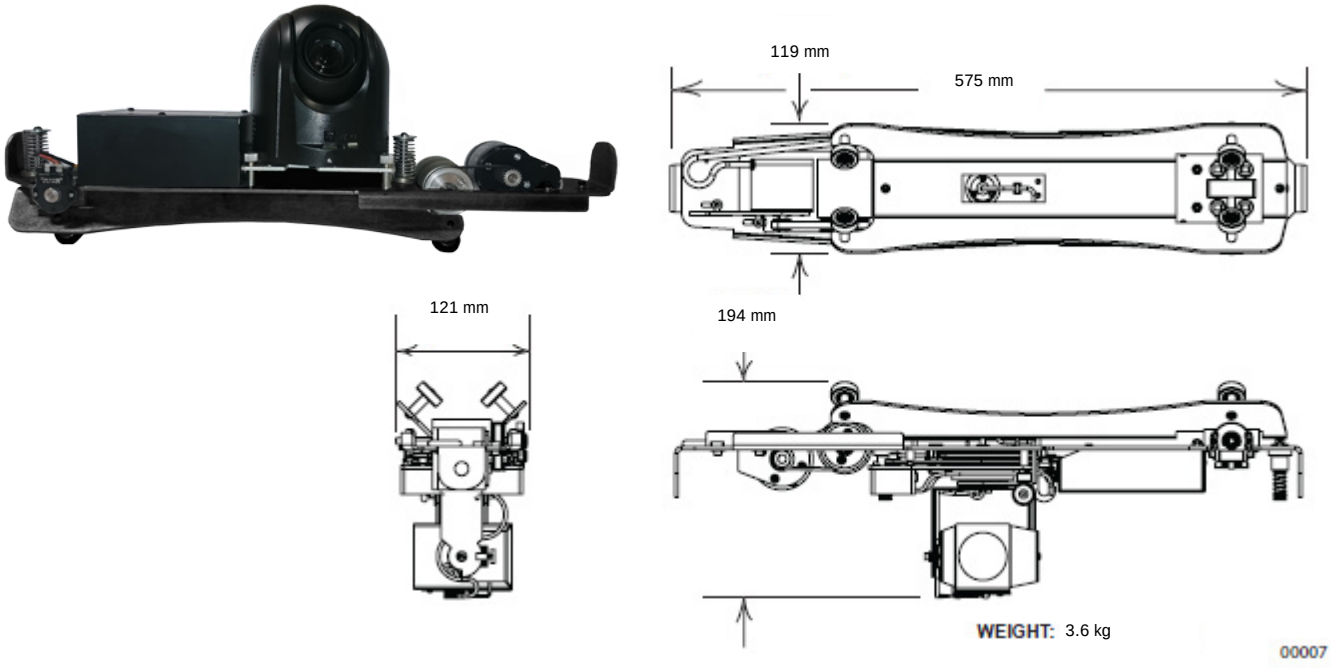


Figure 1-1. **CurveTrack®** *Camera Carriage*

1.3 Units of measure

Dimensions and distances presented in this manual are expressed in metric units of measure.

1.4 General Safety precautions

If possible, avoid installing units in occupied buildings during regular business hours.

Installation area should be blocked off to keep bystanders safe from injury.

The track must be hung a minimum of 2.5 meters above the floor at its lowest point. The AC line providing power to the Power Supply Assembly must be installed by a licensed electrician and must be in total conformance with local electrical codes.

CAUTION

Socket outlets shall be installed nea r the equipment and be readily accessible to the mains plug connections.

Use protective clothing such as a hard hat, safety shoes and heavy leather gloves when doing overhead construction or erection. Wear approved safety glasses at all times.

Make certain you are grounded before handling electronic circuit boards or their components to prevent static electricity from damaging sensitive electronic parts.

Keypad controllers used with this system must contain SELV circuits and be UL, CSA, CE, or ETL certified to UL1950.

Never allow an inexperienced or untrained person to operate the control devices or make adjustments to the unit.

After ensuring that the rail installation is straight, level and plumb, verify that all hardware has been securely fastened.

Comply with all local codes regarding the use of ladders, lifts and scaffolding.

1.5 Responsabilities of the installer

While installing the CurveTrack® system, it is important that the installer understands that he /she is installing a one-of-a-kind system. Installation must follow the guidelines and instructions presented in this manual in order for the system to operate reliably providing years of good service with low maintenance.

Since the stability and reliability of the carriage depends entirely upon the rail, it is important to make sure that the rail is installed straight, level and plumb. All associated components must be installed according to the specifications described in this manual and all applicable Sentryway field bulletins and Tech Tips. Shortcuts taken during installation with the intention of saving time or money can actually result in lost time and increased expense if personnel must subsequently return to make corrections.

Every successful installation is the result of good, thorough planning. It is important that the lead installer research all aspects of the installation before starting the actual, physical installation. This research includes: reviewing construction drawings and Sentryway documentation, verifying that all materials required are at the site, determining the needs of the installation team, and thoroughly reviewing the installation site itself. It is also impor- tant that the customer, and the electrical contractor (if any), are involved in this planning stage.

2. Identification of major components

2.1 System components (see figure 2-1)

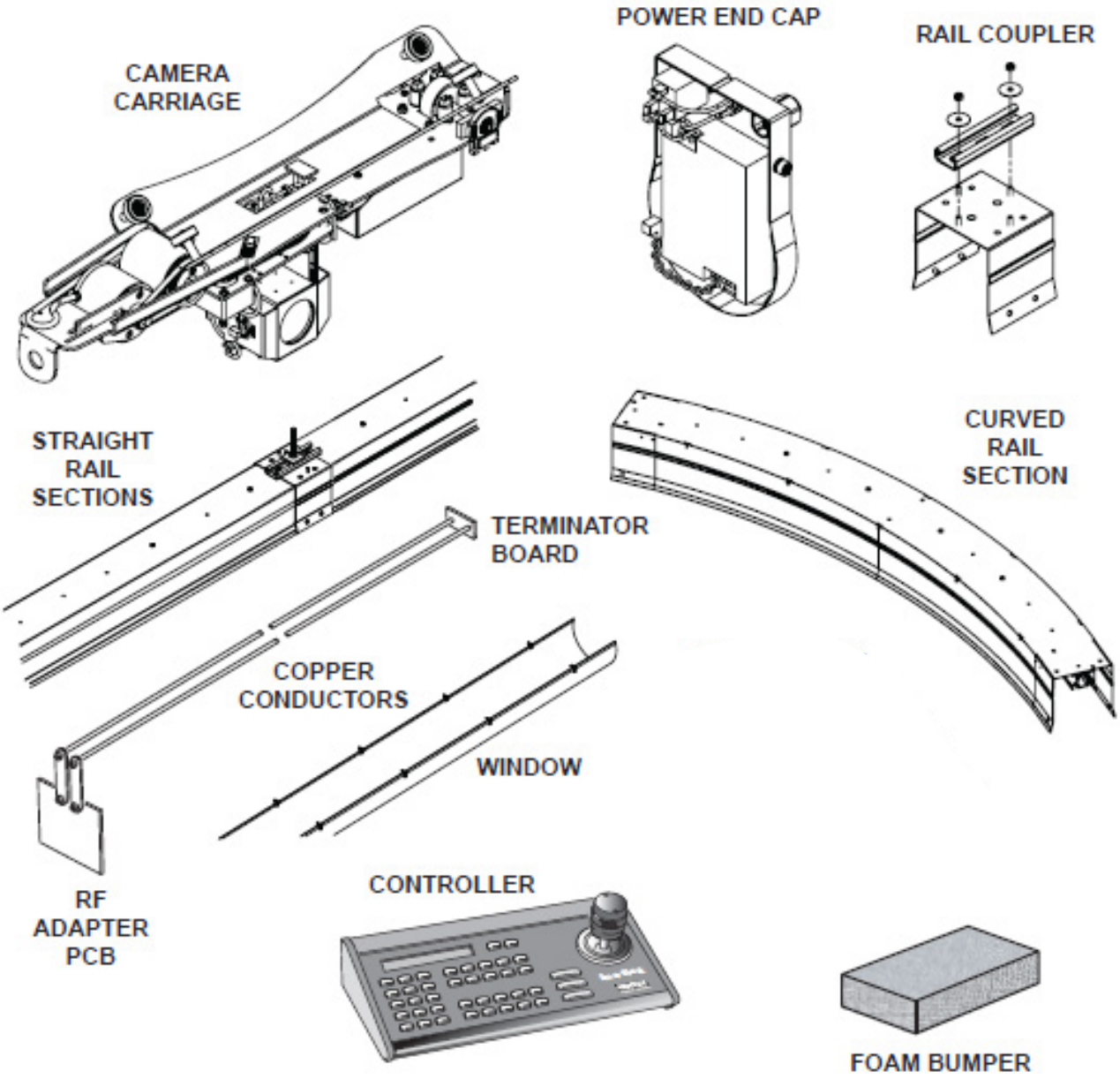


Figure 2-1. Major System Components

2.1.1 Carriage – The carriage is the wheeled assembly that travels the length of the system run. The carriage provides mounting for the PTZ camera, control circuitry and the driving mechanism.

In manual mode, carriage movement and position are determined by the operator. In automatic mode, the carriage "patrols" by continuously traversing the system run at a preset speed. A progammable tour function makes it possible to have the cameras stopped and aimed at preset locations for specific lengths of time, in any desired sequence, while patrolling.

2.1.2 Controller – The Controller is the device used by the operator of the system to send coded command signals to the carriage.

2.1.3 Copper Conductors – Two lengths of copper tubing, pressed into the plastic track portions of the rail sections, extend the length of the system run. These conductors carry control, power, and video signals.

2.1.4 Rail Section – Each straight rail section is 2.5 meter long, three- sided, aluminum structure. Available curved, 45-degree sections of rail can be combined to enable the system to be configured with 45, 90, or 180 degree bends and turns. Straight and curved rail sections are coupled together to form the system run. All rail sections house the plastic track on which the camera carriage rolls. Continuous grooves in the plastic track provide electrically isolated mounting for the copper conductors.

2.1.5 Rail Couplers – The rail couplers are shaped to snap over adjacent rail sections. Threaded studs on the couplers engage holes pre-drilled in the rails. Nylon insert lock nuts secure the assembly together. The short lengths of steel channel by which the rail is hung are secured to the top of each coupler.

2.1.6 Power Supply Assembly (Power End Cap) – This enclosure connects to the power source and converts (rectifies) AC to provide the necessary 24VDC power. The power supply is housed in the Power End Cap at the service end of the system run. The power output cable from the power supply is plugged directly into the RF Adapter PCB. A relay board is included to switch the DC output from a remote location.

2.1.7 RF Adapter Board – The RF Adapter board, located at the same end of the system run as the Power Supply Assembly, acts as an interface and relays video, power, and control signals between the Power Supply Assembly and Video Modem and the copper conductors.

2.1.8 System Run – The term system run refers to a single assembly of multiple rail sections joined together. Only one camera carriage may operate within each system run, and each system run must be operated from its own Power Supply Assembly. An installation site consists of one or more system runs.

2.1.9 Terminator Board – Provides electrical termination of the two copper conductors at the end of the system run opposite the RF Adapter board.

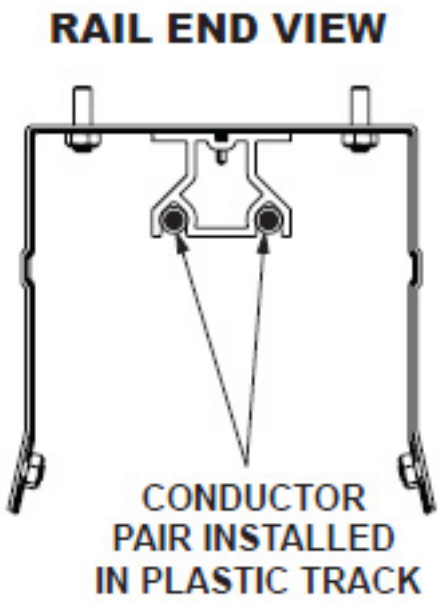
2.1.10 Windows – The window material, delivered to the job site in rolls, is a plastic material with a mirror finish. The windows are secured to the rail sections using small clips that pass through slots punched in the window material and engage a rib on the edge of the rail housing.

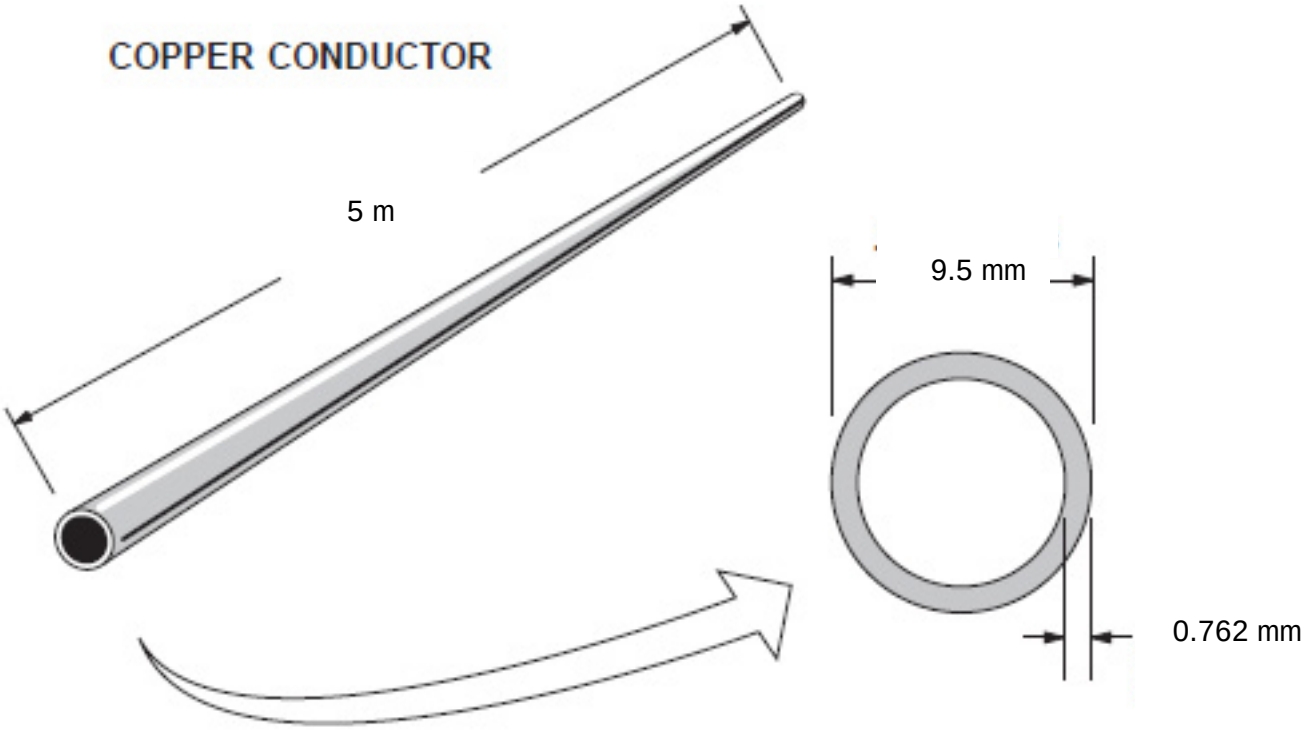
2.1.11 Foam Bumper – A foam bumper is installed at each end of the system run to protect the carriage in the event it strikes the end of the rail.

2.2 Rail components

WEIGHT: 1041 g

Weight specified is for each single 5 m section of copper conductor. Remember that two such conductors, mounted parallel to each other, as shown to the right, are pressed into the plastic track and run the entire length of the rail.





The copper conductor tubes are 9.5mm OUTSIDE diameter by 5 meters long and have a wall thickness of 0.762mm.

00020

Figure 2-3. Copper Conductors.

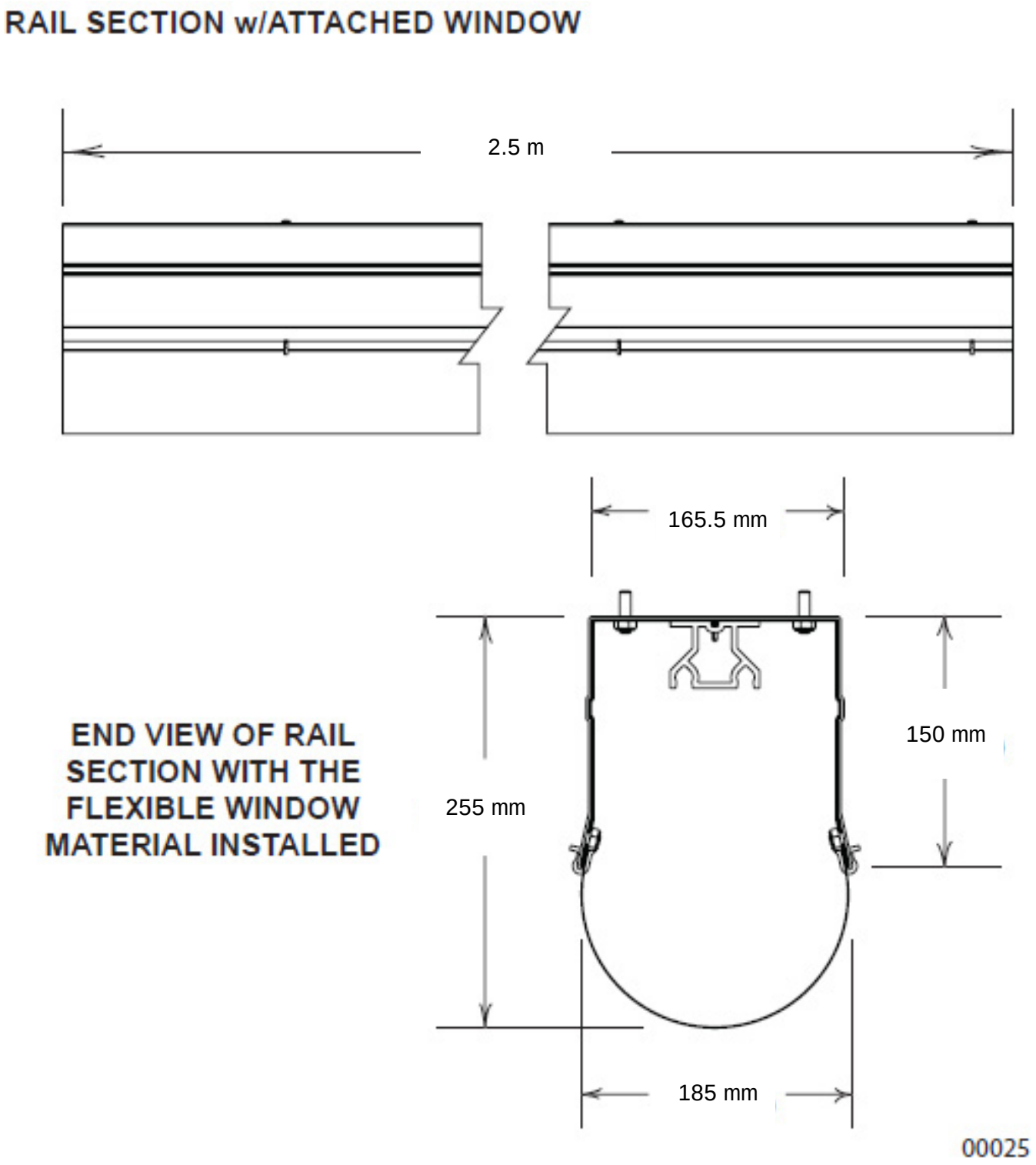


Figure 2-4. Dimensions of Rail Sections

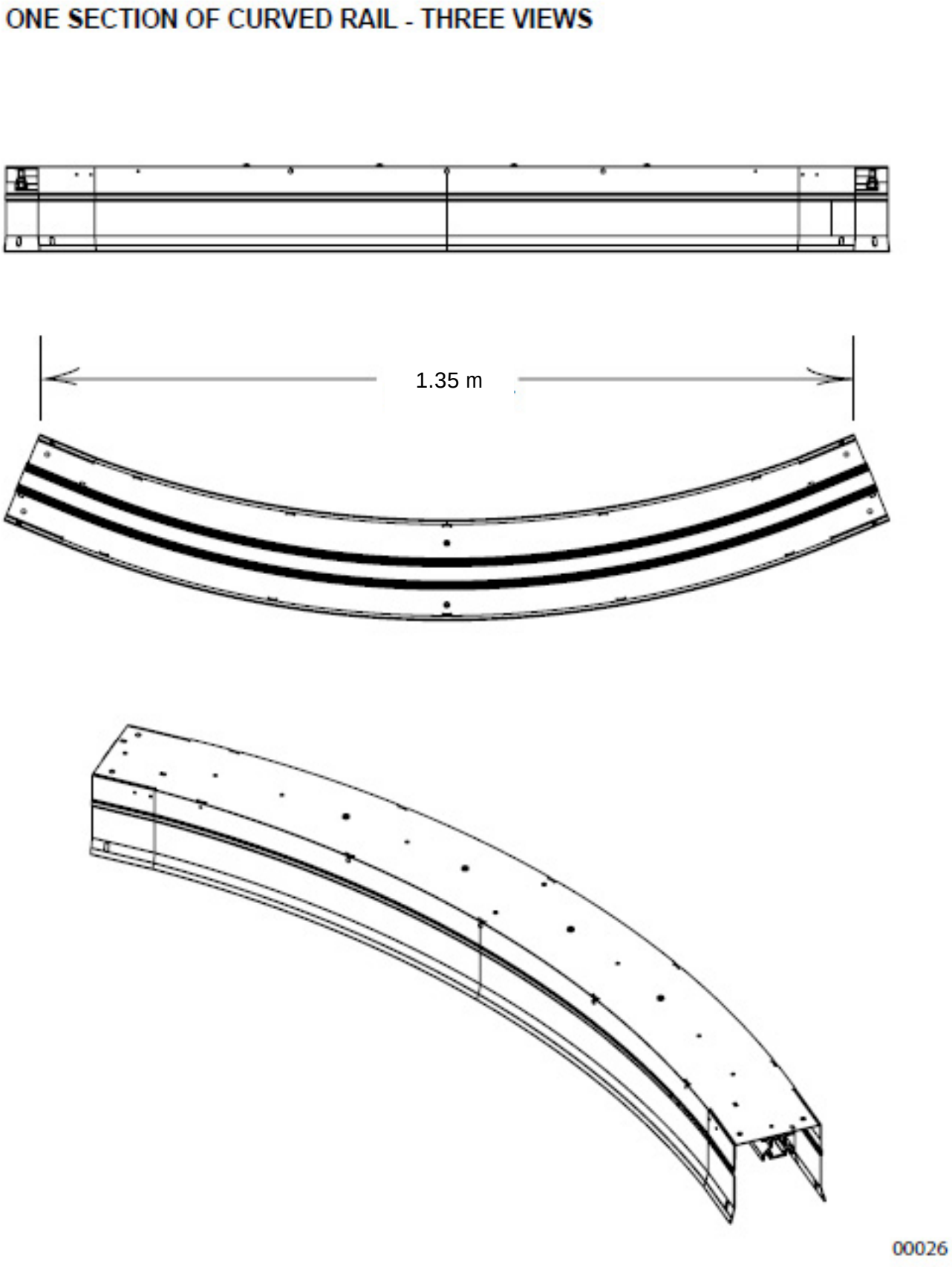


Figure 2-5. Dimensions of Curved Rail Section.

2.3 Carriage components (See figure 2-6)

CAUTION

Any time you lift the carriage, it must be supported with both hands. Lift the carriage by the frame and idler plate ONLY! Do not apply any lifting forces to the pan and tilt assembly or to the electronics enclosure.

Do not rest the carriage on the brushes, pan and tilt assembly, or slip ring. If the carriage must be rested on a hard surface, lay it GENTLY on its side. Alternatively, lean the carriage on end against the wall.

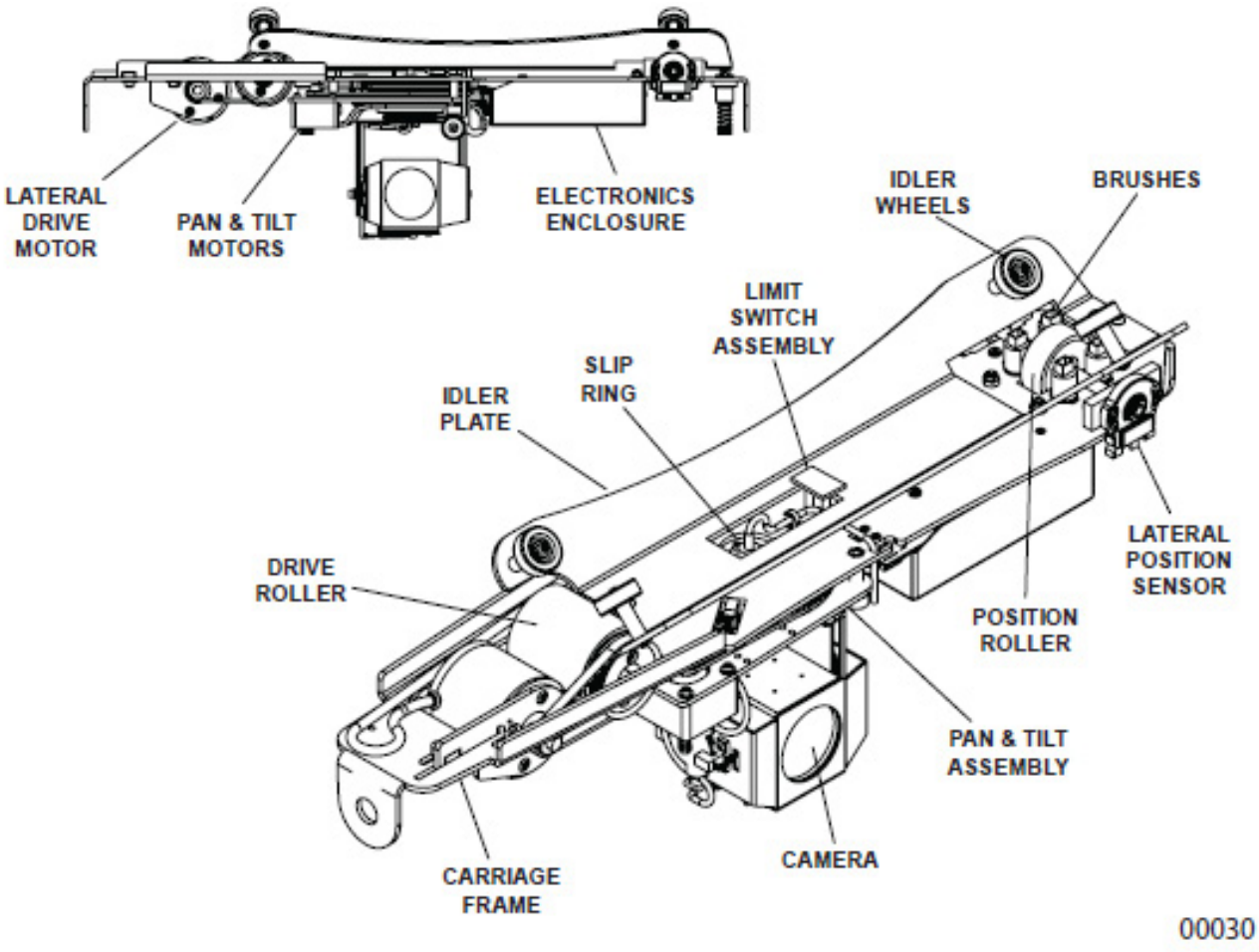


Figure 2-6. CurveTrack® Camera Carriage

2.4 Power supply assembly (Power End) components (See figure 2-7)

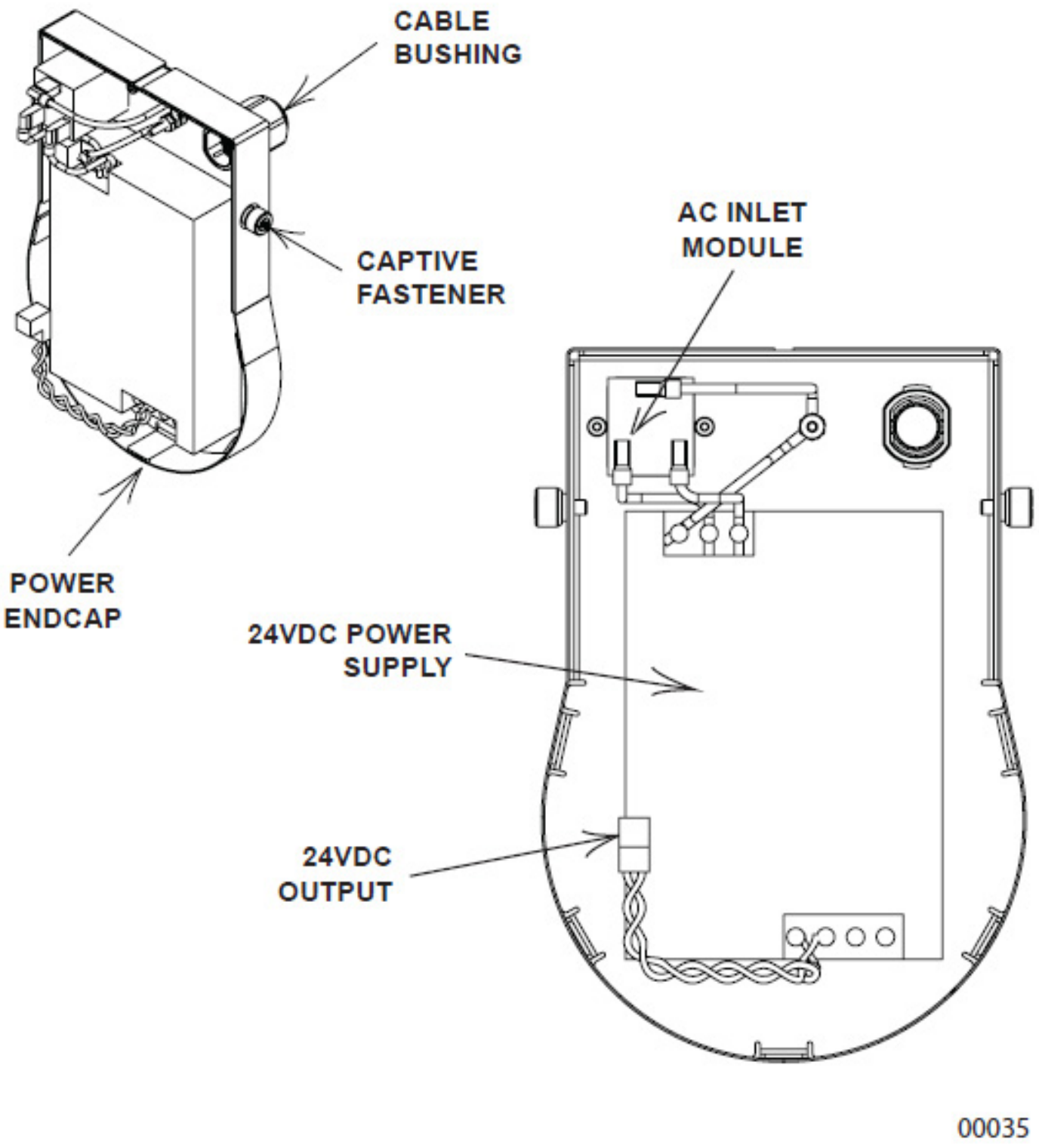


Figure 2-7. Major Components of the End Cap Power Supply Assembly.

3. Site evaluation and planning

3.1 Overview

A good installation is always preceded by good preliminary planning. A comprehensive site survey and a set of floor plans are valuable assets for system planning. It is essential to determine the location best suited for the system run(s), and to identify the type of ceiling or roof structure from which it will be suspended, prior to specifying the required mounting materials. Proper planning will ensure that you have an adequate supply of mounting materials on hand, before starting the installation, to minimize delays.

A system run can be installed either in parallel with, or perpendicular to, bar joists, steel beams, preformed concrete beams, or C– Purlin beams. A flat corrugated steel roof is yet another possibility which will require its own alternative method of installation.

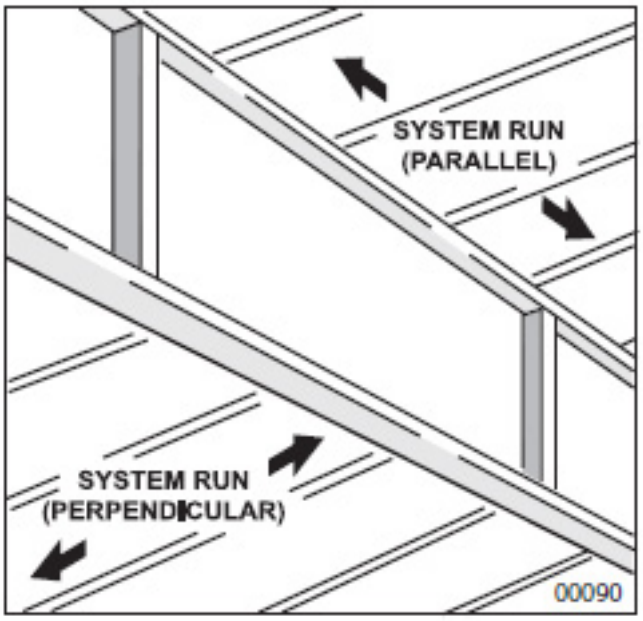


Figure 3-1. Steel Beam Roof Support.

The instructions in Sections 3 and 4 detail specific installation methods suitable for the majority of roof and ceiling types.

Figure 3-1 illustrates a typical steel beam type of roof support structure. Since spacing between beams and the distance between the beams and the floor can vary greatly, close attention to these variables is important when planning for sufficient mounting material. Read the following installation instructions first before deciding on the best mounting method and materials to use.

Figure 3-2 illustrates a typical bar joist type of roof support structure. Mounting to this type of support will not require drilling into the bar joist

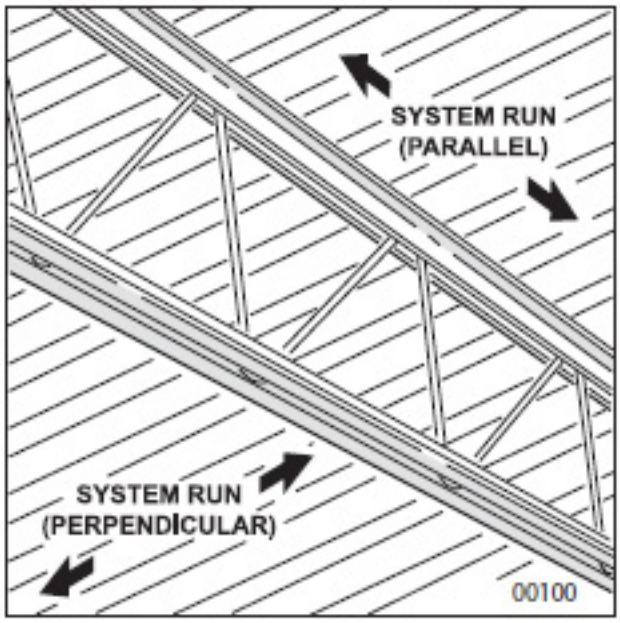


Figure 3-2. Bar Joist Roof Support.

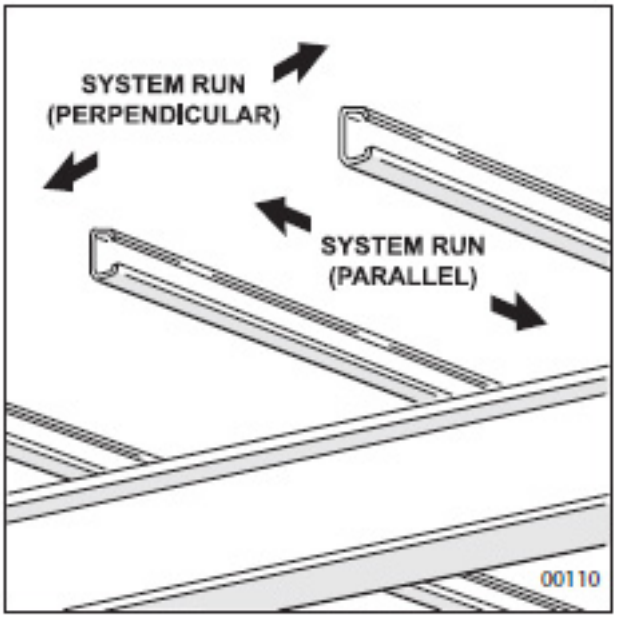


Figure 3-3. C–Purlin Roof Support.

Figure 3-3 illustrates a typical type of C – Purlin roof support structure. Special clamps, which require no drilling, are available from STC.

Figure 3-4 illustrates a typical reinforced concrete type of roof support structure. This type of construction will require drilling into the concrete and the use of bolt anchors or the use of special beam clamps. Installing into flat concrete will always require drilling and inserting bolt anchors.

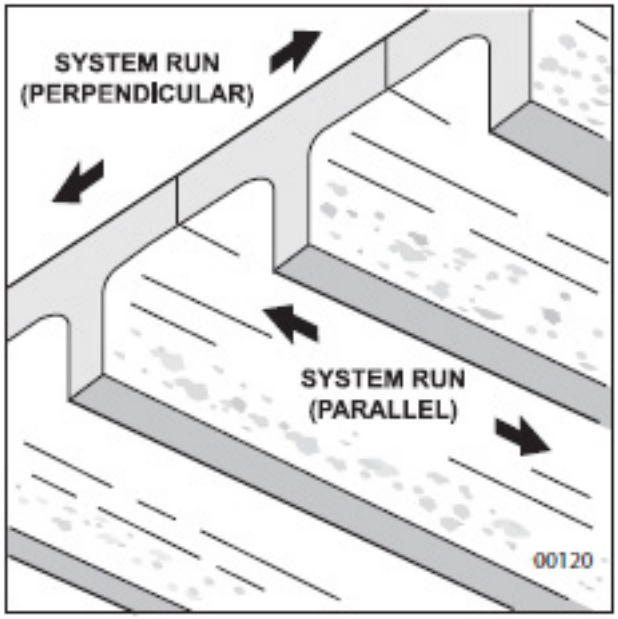


Figure 3-4. Reinforced Concrete Roof Support.

There are some buildings, that have flat corrugated steel roofs which may or may not have additional support structures. If a steel roof has a thickness between 0.8 mm) and 4.76 mm, it is possible to use Vertical Hangers (P/N 0044-0213-00, HANGER, BOX BEAM 3/8") to hang the rail. (See Figure 3-5.) This hanger has a 38 mm long mounting shaft and a M10 x1.5 female thread to accept the threaded rod end. One advantage to using Vertical Hangers is that there are more options available when orienting the system run. If there is a support structure to contend with, the run can be oriented in a parallel or perpendicular direction without regard to the structure. Hangers can be installed wherever necessary. As with all installations, first establish a centerline for the system run.

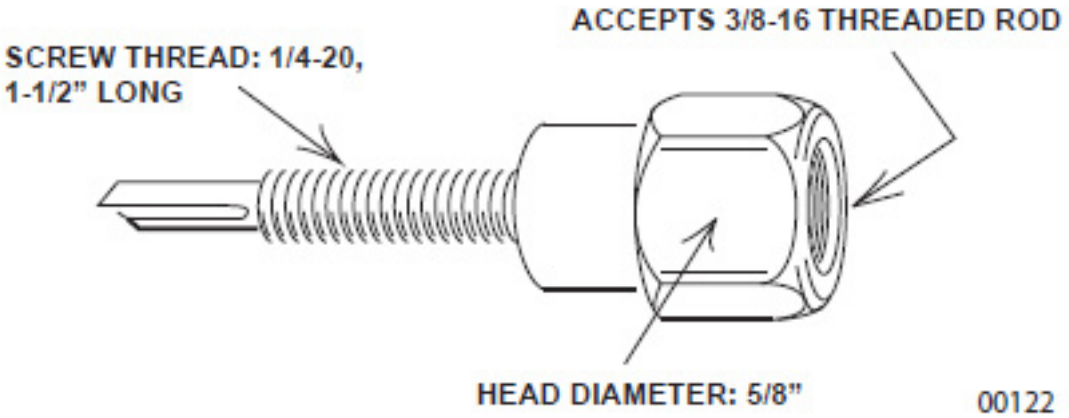


Figure 3-5. Vertical Hangers, P/N 0044-0213-00, Hanger, Box Beam 3/8" .

Locate two rod drops to align with the first and last rail coupler mounting channel. Locate the remaining rod drops along the centerline and placed no more than 5 meters (the length of two rail sections) apart. Drill a mounting hole for each hanger. Hole diameter should equal the thickness of the steel, e.g., 0.8 mm diameter hole for 20 gauge (.036") steel, and 4.76 mm diameter hole for steel that is 3/16" thick (maximum). The remainder of the hanging procedure is the same as it would be when dealing with any roof support structure.

3.2 Setting up a schedule

Installation will progress smoothly if work can be scheduled for when there is little or no outside activity in the work area. Reserve special equipment that may be needed, such as lifts, scaffolding, etc., well in advance. Schedule a qualified electrician well in advance of when you anticipate needing his / her services.

3.3 Planning installation of the system run

Identify a straight, level, and unobstructed area for installing the entire system run. Refer to the engineering drawings for your particular installation to determine the service end of the system run. The Power End Cap (or Alternate Power Supply Assembly, as applicable) and the RF Adapter will need to be located at the service end of the run. Carefully inspect the area above and near the proposed system run for physical obstructions such as drop ceilings, lighting fixtures, water pipes, electrical conduit, HVAC duct work, etc., which might have to be relocated or would force another location for the system run.

Establish a system height (distance from the floor to the system run) that allows adequate clearance from obstructions and maximizes the desired viewing area. The rail must be hung a minimum of 2.5 meters above the floor at its lowest point. Verify at least 0.3 meter of clearance, from the top of the rail section down, over the entire proposed system run.

NOTE

Local codes may dictate different specific distance requirements .

Power for the CurveTrack® systems should be controlled by dedicated circuit breakers. There should be no more than four CurveTrack® Power Supplies (i.e. four system runs) per circuit breaker.

DANGER

Ensure that floor level obstructions to lift equipment, ladders, etc. are accounted for and can be worked around to maintain a safe environment for installation workers and bystanders. Be especially aware of the potential hazard of falling materials, tools and debris as well as potential trip hazards, including power cords, in areas below the installation zone.

3.4 Material inspection and inventory

All CurveTrack® equipment and installation materials that are at the site of the installation must be inspected for damage. All Claims for losses, or damage to the system in transit, must be made with the carrier. Packing slip documentation should be checked carefully against material received to ensure that everything that is needed has arrived. It is suggested that before the actual construction begins, the installation team do a complete inventory while the lead installer reviews the site. Any shortages in parts or materials must be reported as soon as possible so that corrections can be made in a timely fashion.

3.5 Material storage

After inspection, return all materials to their shipping containers to protect them until they are used. Designate a specific storage area in a protected place to prevent accidental damage, especially to delicate electronic parts and the easily – damaged windows.

3.6 Recommended tool list

This list includes tools required to install the entire CurveTrack®™ system.

Safety Equipment

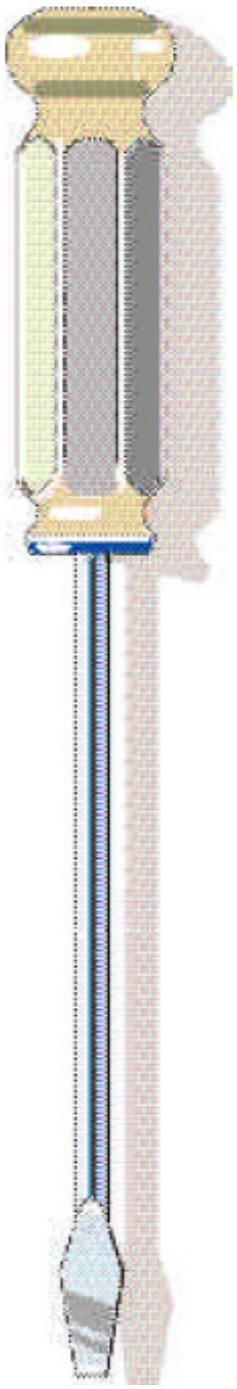
Safety Glasses
First Aid Kit
Hard Hats
Work Gloves
Hearing Protection

Cutting & Shaping Tools

Portable Band Saw
Power Drill
(with hammer capability)
Portable Drill Driver
Tubing Cutter/ Reamer
Utility Knife
Wire Strippers
CAT 5 Crimper/Stripper
Diagonal Cutters
File
Hammer

Measuring Devices

Surveyor's Tape Measure
Multi – Meter
Tape Measure
String Line
Scratch Awl
I-beam level
120 cm Level
Torpedo Level
Plumb Bob



Fastening Tools

Straight Blade Screwdriver
Phillips Screwdriver
Tweaker Screwdriver
Crescent Wrench
Nut Drivers
Hex - Key Wrenches
Drive Ratchets
Socket wrenches
Combination wrenches
Drill Bits
One Set, High Speed
One Hole Saw, 22mm

Soldering Supplies

Propane or MAPP Torch
Solder
Flux
Emery Cloth
Torch Heads

Cleaning Supplies

Paper Towels
Clean, Lint– free Rags
Denatured Alcohol
Alkaline-based cleaner
(not Ammonia)
Non-abrasive Cleaning Pads

Miscellaneous

Drop Light
Flashlight
Duct Tape
Electrician's Tape
Tool Pouch
Silicone Adhesive
One set of Two– Way Radios

4. Support structure installation

4.1 General

Threaded rods (hangers) must be provided for attachment to the end couplers of both the first and last rail section in every system run. One threaded rod is to be located at least at every second rail section coupler. When completed, there should never be a span of more than two rail sections between support rods. Additional B-channel, installed spanning two rail couplers, may be added along the centerline of the rail to provide mounting points for extra threaded rods, guy wires, etc. or to circumvent overhead obstructions.

4.2 Fastening Support Hardware to Bar Joists - Perpendicular

Figure 4-1 illustrates a typical installation of the CurveTrack® rail to bar joist ceiling construction using pre-cut lengths of M10 threaded rod. See paragraph 3.3, Planning Installation of the System Run, to determine hanging height, and paragraph 5.2, Cutting the Threaded Rod, before cutting the threaded rod.

4.2.1 Locate the approximate centerline of the system run and install a taut string line over the full length of the system run. Install the string as high as possible making certain it remains clear of all obstructions.

4.2.2 Thread a M10 x 1.5 hex nut (1, Fig.4-1), M10 spring lock washer (2, Fig. 4-1) and a square washer (3, Fig. 4-1) onto one end of each threaded rod (4, Fig. 4-1) so that 100mm, plus the height of the bar joist angle, is extending beyond the square washer.

4.2.3 Insert the end of the rod assembly between the bottom angles of the bar joist and fasten loosely with a square washer (5, Fig. 4-1), lock washer (6, Fig. 4-1), and hex nut (7, Fig. 4-1). Do not tighten until the associated track section is hung and aligned.

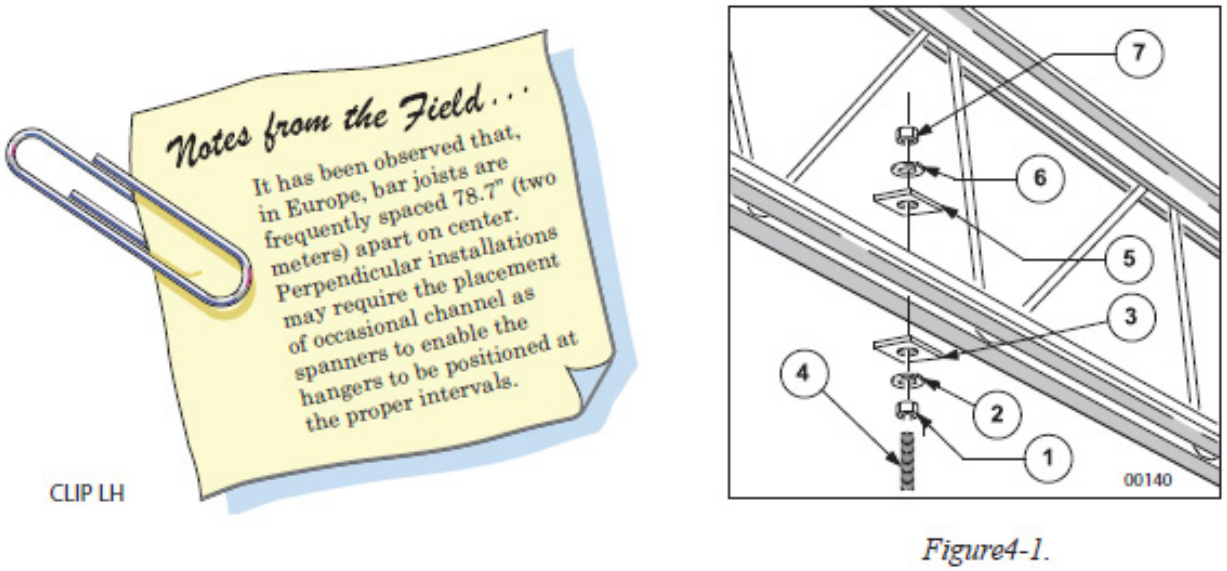


Figure4-1.

4.3 Fastening Support Hardware to Bar Joists - Parallel

When the installation requires the system run to be parallel to the bar joists, metal channel is used as a spanner to bridge the bar joists at each mounting point of the system run as shown in Figure 4-2.

Lengths of channel should be cut 0.3 meter longer than the distance between the bar joists to allow for mounting hardware.

4.3.1 Install the first and the last channels on the system run. Determine the centerline of the system run and mark it on each channel.

4.3.2 Place channels on bar joists every 4.8 meters so that there is one channel for each threaded rod assembly and that each channel is placed at the same location, relative to the string line (refer to paragraph 4.1).

4.3.3

4.3.4 Center channel (1, Fig. 4-2) over bar joist bottom angles with the open side of the channel facing down. Slide M10 channel lock nuts (2, Fig. 4-2) into each end of the channel until they are centered between joist angles.

Assemble M10 x 1.5 hex nuts (3, Fig. 4-2), M10 spring lock washers (4, Fig. 4-2) and square washers (5, Fig. 4-2) onto two M10 x 1.5 x 150mm hex head cap screws (6, Fig 4-2). Insert screw end between bar joist angles and thread into Twirl nuts. Do not tighten screws securely until the rail section is hung and aligned.

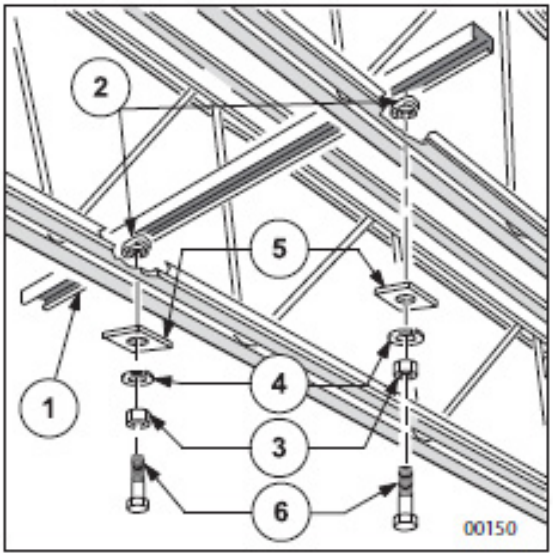


Figure 4-2.

4.4 Fastening Support Hardware to Steel Beams - Perpendicular

Figure 4-3 illustrates the use of Beam Clamps for attaching threaded rod to steel beam ceiling construction.

4.4.1 Locate the approximate center line of the system run. Insert a locking strap (1, Fig. 4-3) into beam clamp (2, Fig. 4-3) and center the first and last beam clamp on the centerline.

4.4.2 Install a taut string line the full length of the system run. Keep the string line in place for use as a plumb line reference when aligning the system run.

4.4.3 Secure beam clamps to beam with square head, cone point set screws (3, Fig. 4-3) and M10 x 1.5 lock nuts (4, Fig. 4-3). Assemble two M10 x1.5 hex nuts (5, Fig. 4-3), one M10 spring lock washer (6, Fig. 4-3) and a swivel (7, Fig. 4-3) on the end of the threaded rod (8, Fig. 4-3) as shown.

4.4.4 Insert plastic bushings (9, Fig. 4-3) into pivot holes on each side of the beam clamps. Position swivels on threaded rod assemblies over the plastic bushings and secure with hex bolts (10, Fig. 4-3) and elastic lock nuts (11, Fig. 4-3). Tighten elastic lock nuts lightly so that rod assemblies can swivel on beam clamps. When the position of the clamps are finalized, bend locking straps over the far corner of the steel beams and tighten set screws and locking nuts securely. Observe that in the illustration, the locking strap (1, Fig. 4-3) is shown bent into the locking position.

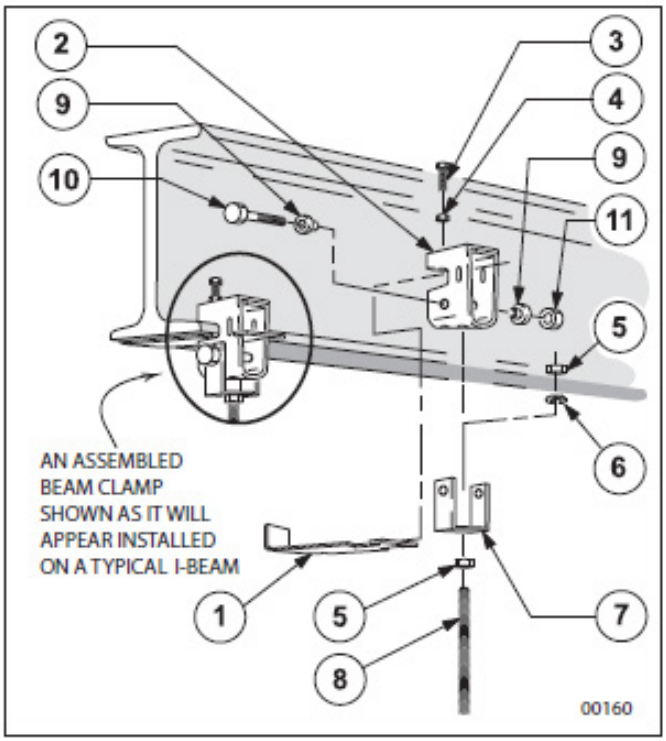


Figure 4-3.

4.5 Fastening Support Hardware to Steel Beams - Parallel

When the installation requires the system run to be parallel to the steel beams, channel is used as a spine to bridge the beams at the mounting point for each rail section as shown in Figure 4-4. Lengths of channel should be cut 0.3 meter longer than the outside distance between the beams to allow for mounting hardware.

4.5.1 Position each channel (1, Fig. 4-4) with open side down. Place U–bolts (2, Fig. 4-4) around channel, facing up, and through beam clamps (3, Fig. 4-4) and M10 spring lock washers (4, Fig. 4-4). Thread M10 x 1.5 hex nuts (5, Fig. 4-4) loosely to each end. These assemblies can be made in the quantity needed for each system run before attaching to bottom of beams.

4.5.2 Raise and center channel assemblies in the desired locations on the beams, and slide lamps and U–bolts firmly against the inside legs of the beams. Check to ensure that the distance between channels coincides with the desired location of threaded rod hangers.Verify approximate "squareness" of channels to the beams, and then tighten hex nuts securely.

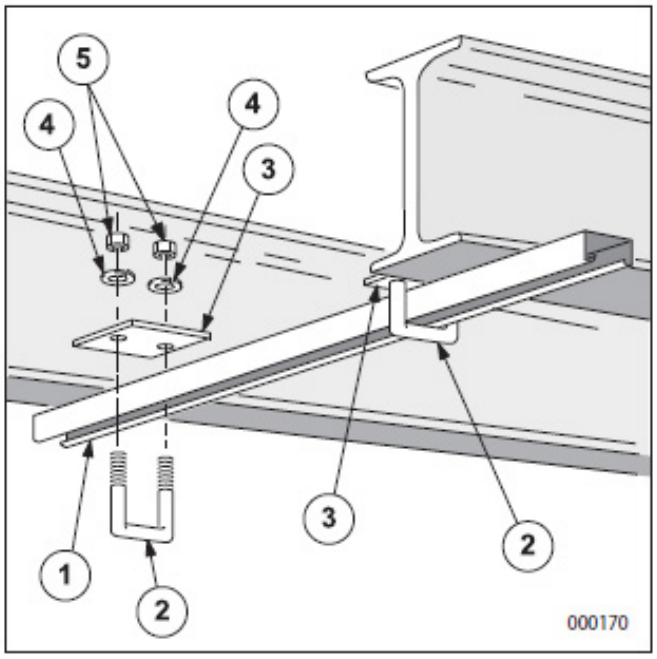


Figure 4-4.

4.6 Fastening Support Hardware to C–Purlin Beams - Perpendicular

Figure 4-5 illustrates the use of beam clamps for attaching threaded rod to C–Purlin beam construction.

4.6.1 Mark the centerline of the system run on beams.

4.6.2 Insert locking straps (1, Fig. 4-5) into slots in each beam clamp (2, Fig. 4-5) and then place each beam clamp over the open lower edge of the beam.

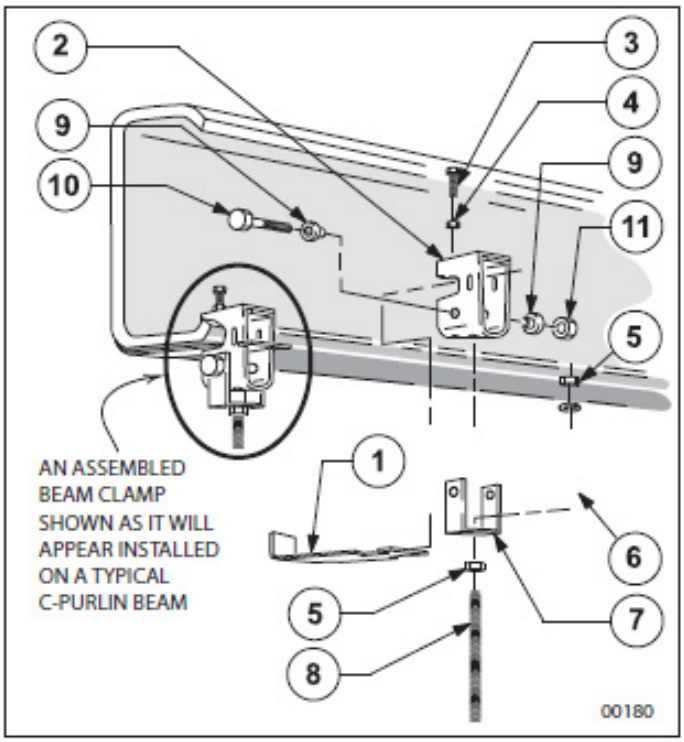


Figure 4-5.

4.6.1 Secure clamps to beams with square head cone point set screws (3, Fig. 4-5) and M10 x 1.5 hex nuts (4, Fig. 4-5). Observe that, in the illustration, the locking strap (1, Fig. 4-5) is shown bent into the locking position.

4.6.2 Assemble two M10 x 1.5 hex nuts (5, Fig. 4-5), one spring lock washer (6, Fig. 4-5) and a swivel (7, Fig. 4-5) on one end of each pre-cut threaded rod (8, Fig. 4-5).

CAUTION

It is important to remember that, when mounting the support structure to slanted ceilings, the ceiling pitch must be taken into account when measuring and cutting lengths of threaded rod.

4.6.5 Insert plastic bushings (9, Fig. 4-5) into pivot holes on each side of beam clamps. Position swivels of threaded rod assemblies over plastic bushings and secure with hex bolts (10, Fig. 4-5) and elastic lock nuts (11, Fig. 4-5). Tighten elastic lock nuts lightly so that rod assemblies can swivel on beam clamps. When position of clamps is finalized, bend locking straps over the back side of beams and tighten set screws and lock nuts securely.

4.6.6 Locate the approximate centerline of the system run and locate the first and last beam clamp on the centerline.

4.6.7 Install a taut string line the full length of the system run so that it is just off of the outside edge of the clamp. Keep the string line in place for use as a plumb line reference when aligning the system run.

4.7 Fastening Support Hardware to C–Purlin Beams - Parallel

When the installation requires the system run to be parallel to the C– Purlin beams, channel is used as a spine to bridge the beams at each mounting point of a rail section as shown in Figure 4-6. Lengths of channel should be cut 0.3 meter longer than the outside distance between beams to allow for mounting hardware.

4.7.1 Position each channel (1, Fig. 4-6) with the open side down. Place U–bolts (2,Fig. 4-6) around channel facing up and through beam clamps (3, Fig. 4-6) (bent edges both facing the same direction) and fasten with M10 spring lock washers (4, Fig. 4-6) and M10 x 1.5 hex nuts (5, Fig. 4-6).

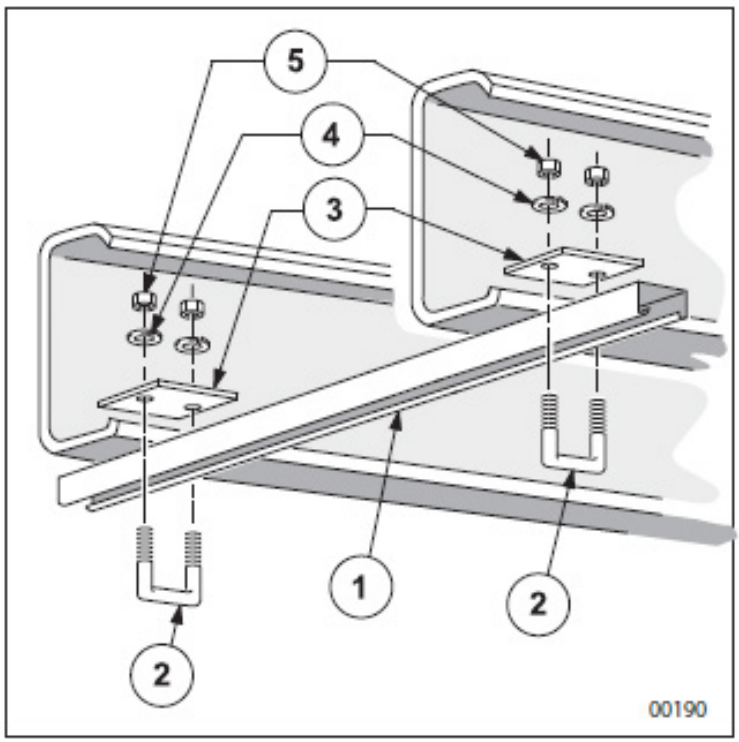


Figure 4-6.

4.7.2 Raise and center channel assemblies at the desired position against beams. Hook bent edge of beam clamps over open edge of C – Purlin beams. Check to ensure that distance between channels coincides with the desired location of threaded rod hangers. Verify that the channels are approximately square to the beams, and then tighten the hex nuts securely.

4.7.3 Install a taut string line, running the full length of the system run, 100mm to one side of where the centerline of the rail sections will be located. Keep the string line in place to use as a plumb line reference when aligning rail sections later.

4.8 Fastening Support Hardware to Flush Concrete - Parallel and Perpendicular

Installing support structure to concrete presents both special considerations and limitations as well as some advantages. An advantage of mounting in concrete is the unrestricted positioning of the locations for threaded rod drops that allow the support structure to be positioned at the optimum location (see Figure 4-7). The short, 355mm channel must be placed in accurate alignment on the system run centerline if you choose to mount the channel parallel to the system rails. This provides significant room for adjustment of the rod drops to connect with the mounting points on the rail connectors.

There is less height adjustment available than with some other types of construction due to the flush mounting of the channel. Maximum height adjustment will be limited to 150mm in the turnbuckles, which must be used with this type of construction.

4.8.1 Establish the location of the system run and, using a chalk or snap line, mark the centerline of the run. Center the channel on a point where a rod drop will be located. Using the channel as a template, mark, centerpunch, and drill additional holes centered in the slotted holes on each end of the channel. Centerpunch and, using a carbide–tipped concrete bit, drill the two holes in the concrete on the centerline.

4.8.2 Proceed to mark and drill sets of holes down the centerline at intervals that match the desired location of threaded rod drops. Most threaded rod drops on straight sections of rail will be 2.5 meters apart.

NOTE

The depth and diameter of the holes drilled will be determined by the concrete anchors specified in the Bill Of Materials. Fastening hardware can also vary, depending upon the installation.

4.8.3 Install concrete anchors (1, Fig. 4-7) in each drilled hole, and set them with a sharp hammer blow.

4.8.4 Mount 355mm sections of channel (2, Fig. 4-7) to the concrete, using bolts (3, Fig. 4-7), spring lock washers (4, Fig. 4-7) and fender washers (5, Fig. 4-7) through the end and center slots of the channel and into the concrete anchors.

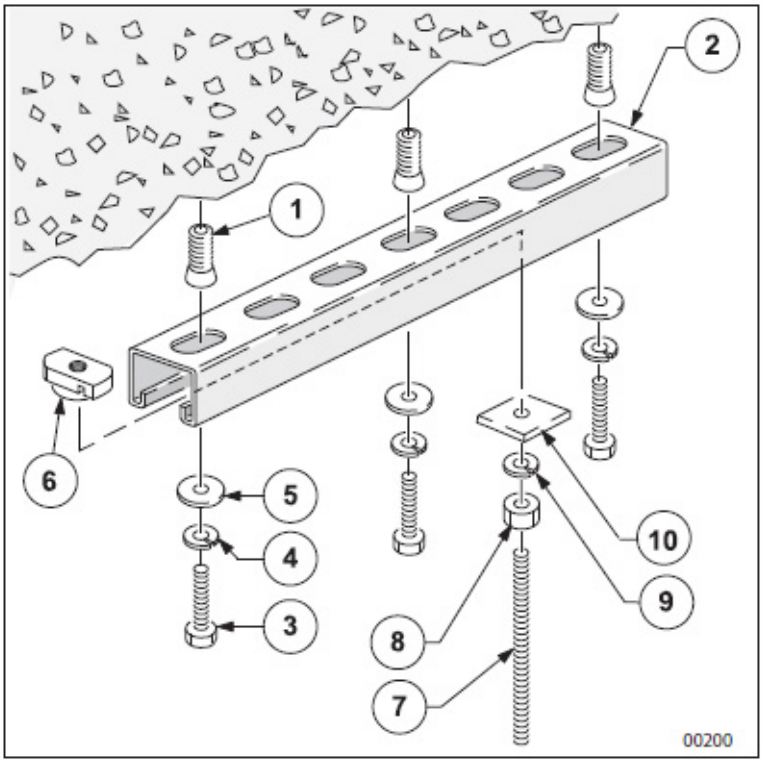


Figure 4-7.

4.8.5 Slide a M10 channel lock nut (6, Fig. 4-7) into the channel.

4.8.6 Establish the length for the threaded rod (7, Fig. 4-7) by measuring the distance from the concrete to the top of the rail section when the rail is at the desired height above the floor. Subtract 200mm for the turnbuckle adjustment portion. Cut the rod.

4.8.7 Thread M10 x 1.5 hex nuts (8, Fig. 4-7) on one end of the threaded rods. Install M10 spring lock washers (9, Fig. 4-7) and square washers (10, Fig. 4-7) on the threaded rod.Screw this end into the Twirl nut in the channel until the threaded rod almost bottoms out in the channel, and then fasten hex nut finger tight. When you are ready to attach the threaded rods to the rail, refer to paragraph 6.4 and 6.5.

4.9 Fastening Support Hardware to Reinforced Concrete Beams

Figure 4-8 illustrates the attachment of channel to one type of reinforced concrete. If the system run is parallel to beams (as shown), concrete anchors and lag bolts are used on each end of the channel spanning two beams. This type of installation uses threaded rod assemblies to hang the rail.

4.9.1 Establish the location of the first attachment hole. Place a carpenter's square against the concrete beam and squarely mark the location of the attaching holes in the adjoining beams. Use a length of channel as a template for hole spacing.

4.9.2 Using a carbide– tipped concrete bit, drill holes at each location. The depth and diameter of the holes drilled will be determined by the concrete anchors specified in the Bill Of Materials. Fastening hardware can also vary, depending upon the installation. Drive anchors (1, Fig. 4-8) into each hole.

4.9.3 Position channel (2, Fig. 4-8) as shown, and fasten with flat washers (3, Fig.4-8), lock washers (4, Fig. 4-8) and lag screws (5, Fig. 4-8).

4.9.4 Proceed to mark and drill sets of holes down the length of the system run. When ready to attach threaded rod to the rail sections, refer to Figure 5-2.

NOTE

When mounting to reinforced concrete beams for perpendicular system runs, installation will be the same as for flush mount concrete. (See Figure 4-7.) Turnbuckles must be used between the threaded rod and the rail sections as shown in Figure 5-3.

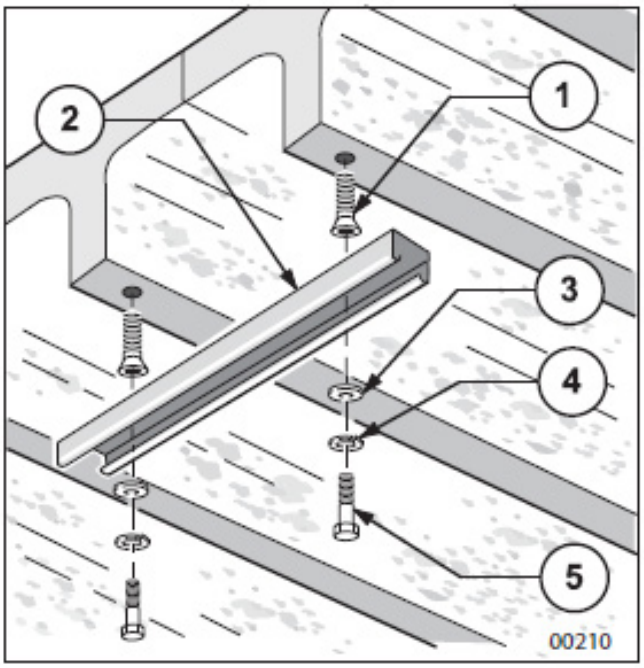


Figure 4-8.

5. Threaded rod installation

5.1 General

Each rail section is suspended from the supporting structure using M10 threaded rod. Refer to Site Evaluation and Planning, paragraph 3, and, more specifically, Planning Installation of the System Run, paragraph 3.3, for suggestions on determining drop distance.

5.2 Cutting the threaded rod

The threaded rod is delivered to the job site in 3 meter lengths. Each rod must be cut to the required length. Figure 5-1 illustrates the methods used to determine the proper length for the rods. Adding an additional 100mm to each rod will allow for alignment adjustments. Installations that require swivels on the beam clamps should not add the 100mm to the threaded rod measurement, because all adjustment must be made using the turnbuckles.

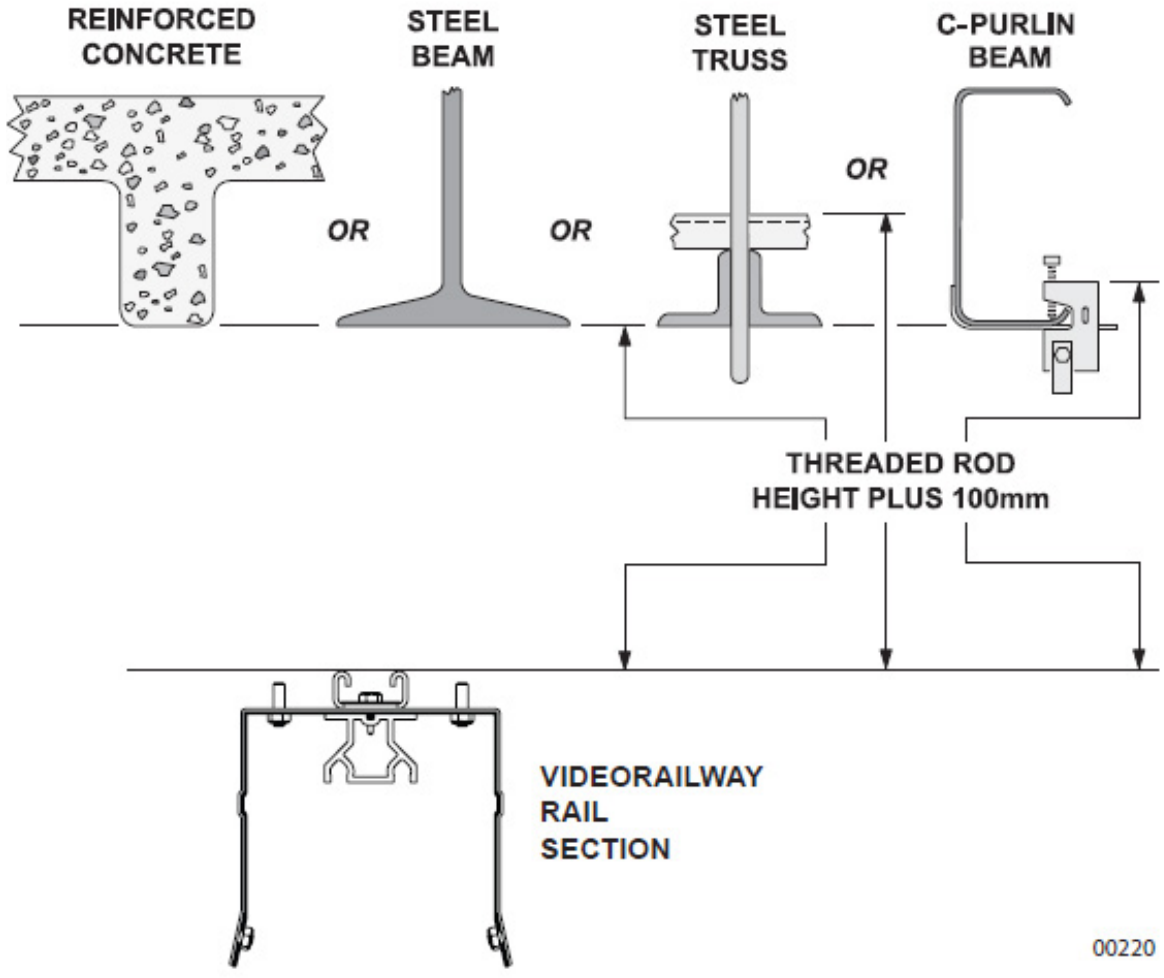
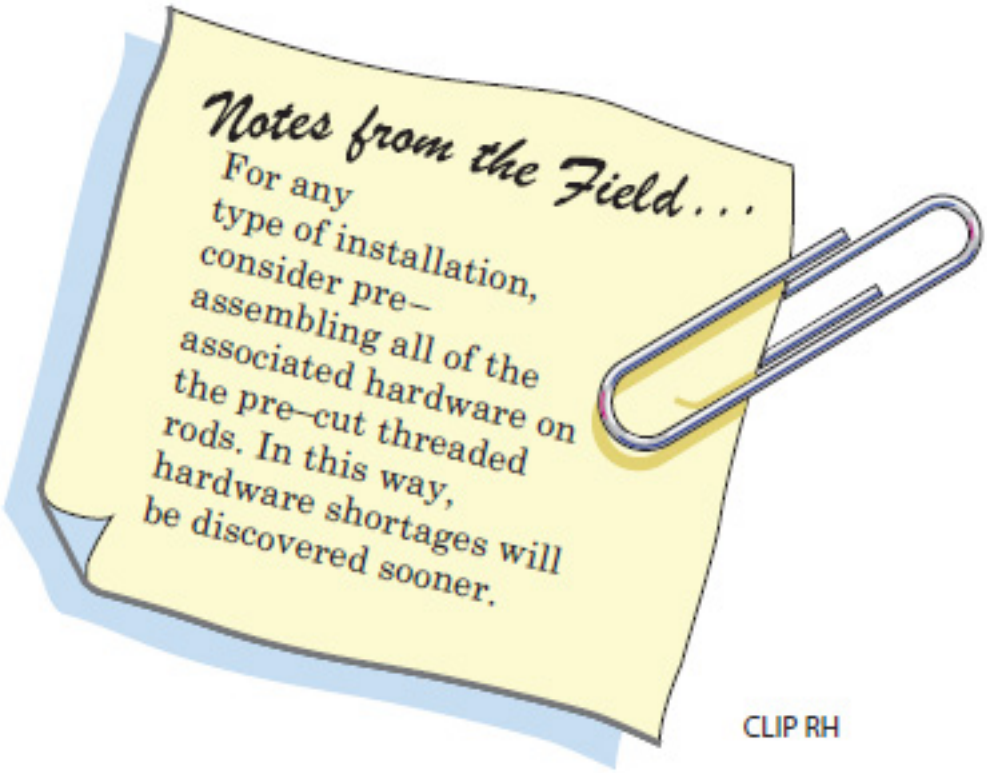


Figure 5-1. Determining Correct Lengths for Threaded Rods.

Cut two equal lengths of rod for the first two rail sections in the system run, and cut at least one more length for each remaining rail section. On C– Purlin and steel beam perpendicular installations that allow the beam clamps to be mounted in a vertical position, it is possible to run the threaded rod up and through the beam clamp, eliminating the swivel. Measure to the top of the clamp for this type of installation. Subtract 200mm from the total length of the threaded rod when using turnbuckles to adjust for the desired length.



5.3 Installing threaded rod in channel for parallel runs

Figure 5-2 illustrates a typical threaded rod installation where there are no turnbuckles used. Without turnbuckles, all height adjustments must be made from above the pre- installed support channel. If the threaded rod exceeds 1.25 meters in length, it is difficult to see leveling devices placed on the track. Therefore, when the overall drop length exceeds 1.25 meters, or, when attaching rods to flush ceiling mounts, or Vertical Hangers, install turnbuckles on the lower end of the threaded rod assemblies to facilitate adjustment. Refer to paragraph 5.4, Installing Turnbuckles on Threaded Rods.

NOTE

Fasteners shown on the lower end of the threaded rod may be pre-assembled and the rail section mounting channels slid onto the Twirl nuts, or, the Twirl nuts may be pre–installed in the rail mounting channels. In this way, as the rails are lifted into position, the threaded rods can be turned into the Twirl nuts.

5.3.1 Install two rods to suspend the first two rail sections, and install at least one rod for each additional pair of rail sections. It is not necessary to provide a dedicated rod drop for every section. It is sufficient to provide one rod drop for every second rail section. In this way, rail sections can be assembled and hung in pairs. Distance between threaded rods, or drops, cannot exceed 5meters (the combined length of two rail sections).

5.3.2 Thread M10 x 1.5 hex nuts (1, Fig. 5-2) on M10 threaded rods (2, Fig. 5-2) 165mm from the end. Install M10 spring lock washers (3, Fig. 5-2) and square washers (4,Fig. 5-2) on the rods.

5.3.3 With the aid of a step ladder or lift, insert the rod assemblies through the appropriate slotted holes in the pre – installed channel (5, Fig. 5-2). Secure with flat fender washers (6, Fig. 5-2), M10 spring lock washers (7, Fig. 5-2) and M10 x 1.5 hex nuts (8, Fig. 5-2).

5.3.4 Thread M10 x 1.5 hex nuts (9, Fig. 5-2) on the bottom of the threaded rod at 25mm from the end. Install M10 spring lock washers (10, Fig.5-2), M10 square washers (11, Fig. 5-2), and Twirl nuts (M10 channel lock nuts) (12, Fig. 5-2).

NOTE

Leave fasteners at the top of the rods loose so that rods can be turned into Twirl nuts i f you intend to pre–install Twirl nuts into rail section mounting channels. The hardware on each threaded rod is to be tightened later as the corresponding rail sections are hung and properly aligned.

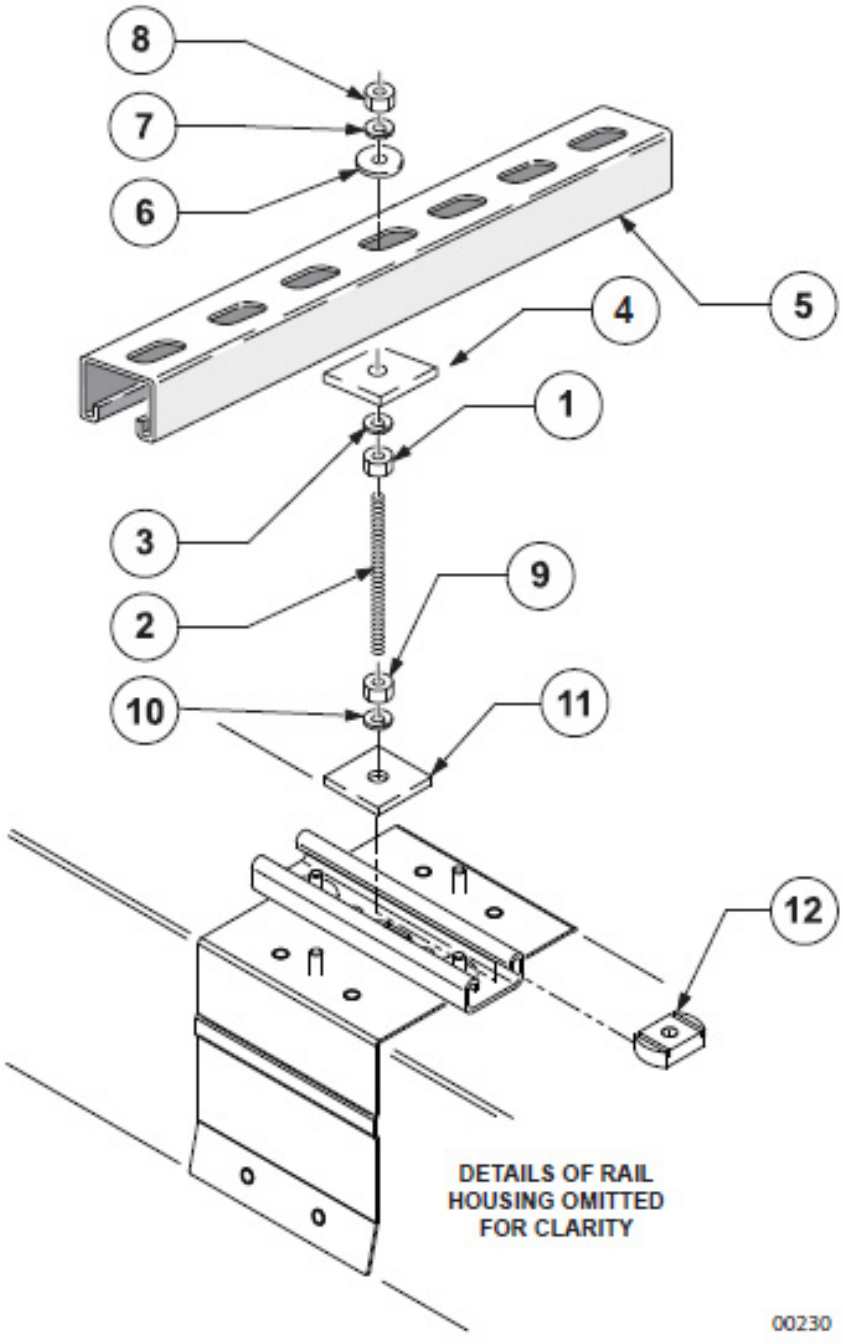


Figure 5-2.

5.4 Installing turnbuckles threaded rods

Figure 5-3 illustrates the recommended hardware necessary for attaching turnbuckles between the threaded rod assemblies and the rail sections. Turnbuckles may be used on all installations to aid in rail alignment, but are recommended especially for threaded rod drops exceeding 1.25 meters.

5.4.1 Insert a M10 x 1.5, 125mm square head bolt (1, Fig. 5-3) through small O.D. flat washer (2, Fig. 5-3) and into the non – threaded hole in turnbuckle (3, Fig. 5-3).

5.4.2 Thread M10 x 1.5 hex nut (4, Fig. 5-3), M10 spring lock washer (5, Fig. 5-3) and turnbuckle (3, Fig. 5-3) onto bottom ends of threaded rod (6, Fig. 5-3) so that the threads extend about halfway into the turnbuckles.

5.4.3 Install M10 spring lock washer (7, Fig. 5-3) and two M10 x 1.5 hex nuts (8, Fig. 5-3) on bolts (1, Fig. 5-3) so that lower hex nuts are 25mm from the end.

5.4.4 Install M10 spring lock washer (9, Fig. 5-3), M10 flat washer (10, Fig. 5-3) and M10 channel lock nut (11, Fig. 5-3).

NOTE

Twirl nuts can also be inserted into rail section mounting channels before or after raising rails into position. Turnbuckle bolts can then be turned into the Twirl nuts.

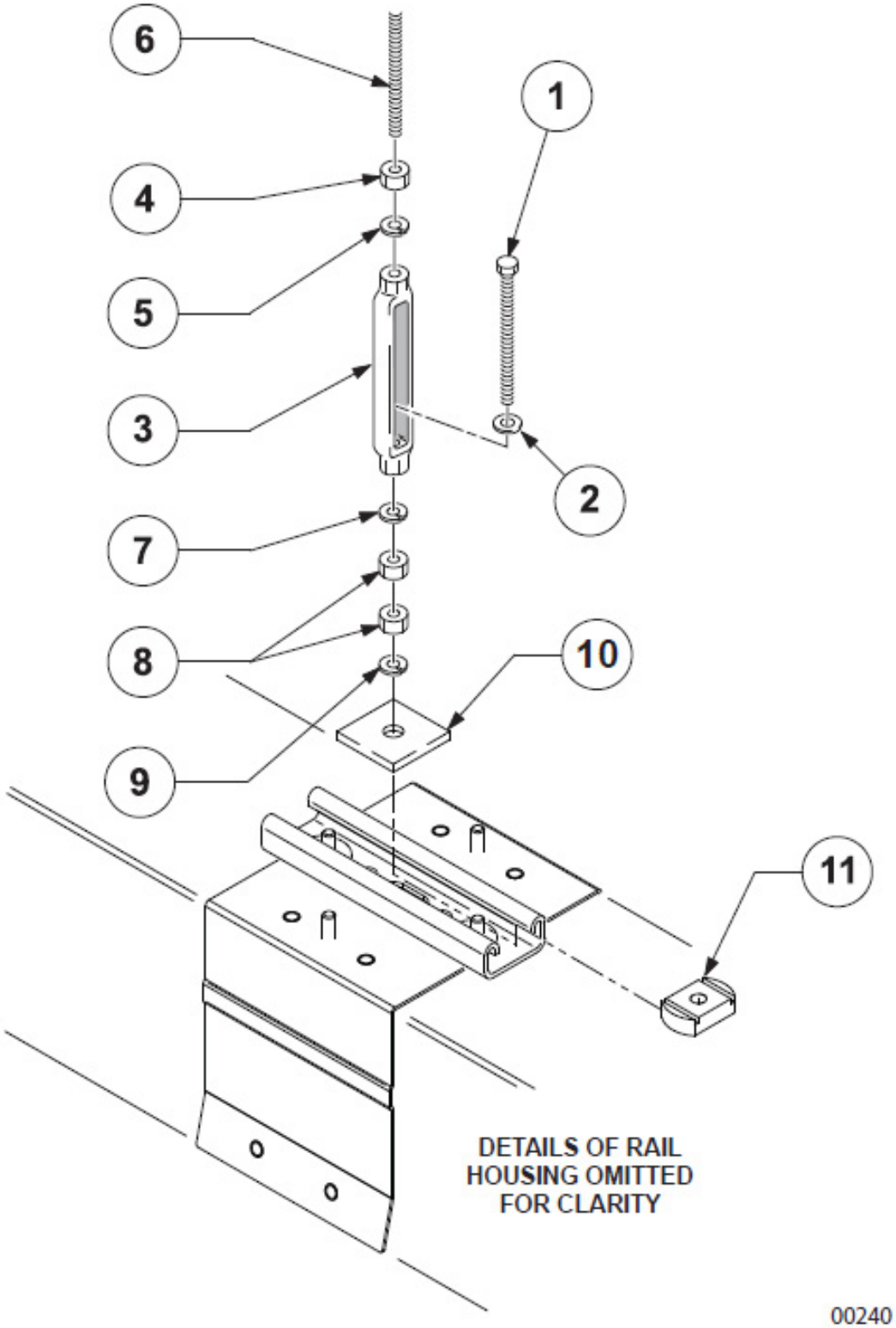

6
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Figure 5-3.

6. Rail section installation

6.1 Rail section inspection

Each rail section is suspended from the supporting structure using M10 threaded rod. Refer to Site Evaluation and Planning, paragraph 3, and, more specifically, Planning Installation of the System Run, paragraph 3.3, for suggestions on determining drop distance.

6.1.1 Inspect all rail sections for obvious defects.

6.1.2 Working at floor level, take the first two rail sections to be hung, and butt them up against each other end – to–end. Check alignment of corresponding mating surfaces, especially in the area where the carriage wheels will cross the seam.

6.1.3 Inspect the alignment of the plastic tracks inside the rail sections where they will be joined. If alignment is poor, try another rail section to find a better match.

6.1.4 Fasten the two rail sections together with a rail coupler. See Figure 6-1. Repeat the two previous steps for each pair of adjoining rail sections. A rail coupler must also be installed at each end of the system run to provide both hanging points for the ends of the system run and fastening points for the bumper stops and the end caps.

6.2 Rail section cleaning

Clean interior surfaces of the rail section, as required, with a lint–free rag, slightly dampened with plain water. Do not use solvents or cleaning solutions of any kind.

6.3 Rail section preparation

DANGER

Use extreme care when entering this phase of the installation. Handling heavy or awkward objects at varying heights above floor level can be hazardous to personnel and equipment.

NOTE

One of the most effective ways to reduce installation time is to run a string line that extends just beyond each end of the planned system run. Locate it so that it will be level and parallel to the top edge of the rail sections. Use the string to help in aligning the system run.

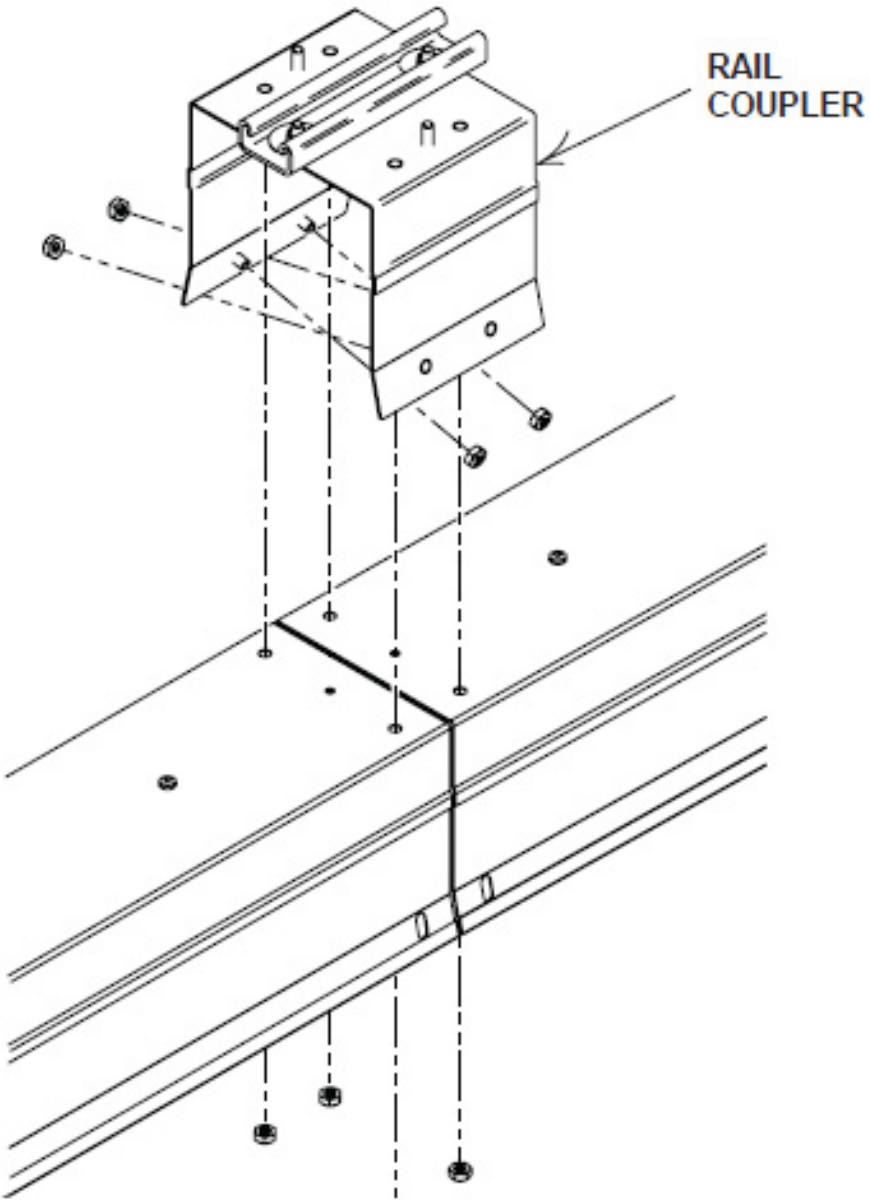


Figure 6-1. Installation of Rail Section Couplers.

CAUTION

Raising and attaching rail sections require a minimum of two persons. At exceptionally high installations, or when there are large, immovable objects beneath the erection site, power lifts or scaffolding may be required.

6.3.1 Position two step ladders of sufficient height below the intended location of the first two rail sections.

6.3.2 Lift the rail sections by holding each end of the assembly firmly in a horizontal position and "walking" it up to the attachment height.

CAUTION

Raising and attaching rail sections require a minimum of two persons. At exceptionally high installations, or when there are large, immovable objects beneath the erection site, power lifts or scaffolding may be required.

6.3.3 Connect threaded rods to rail sections. Refer to paragraph 6.4 or 6.5, as applicable.

6.3.4 Check alignment of rail sections. Refer to paragraph 6.6.

6.3.5 Raise the next pair of rail sections to the far end of the first or previous rail sections, making sure that they are kept horizontal. As the installer holds the mating end of the next pair of rail sections in position, snap a rail section coupler over the adjoining rail sections and secure it using the supplied nylon insert lock nuts

6.3.6 Tighten the nylon insert lock nuts securing each rail section coupler.

6.4 Connecting Rail section to threaded rod assemblies - Method 1

NOTE

Guy wires (refer to paragraph 6-7) are always required in order to stabilize the system run. A 7.5m rail will need two guy wires at each end and another pair in the center. Two more guy wires will be needed for each additional 3m of rail. To accommodate fastening the guy wires, insert the associated hardware in the rails at this point in the installation

If M10 channel lock nuts (11, Fig. 5-3) or (12, Fig. 5-2) have been attached to threaded rods or turnbuckles, they must be carefully slid into the mounting channels of the rail section couplers. Do not exert excessive force on the rod assemblies, as that could bend them out of alignment.

Using a level, adjust threaded rods so that they are plumb and parallel to each other.

6.5 Connecting Rail section to threaded rod assemblies - Method 2

NOTE

Refer to NOTE in paragraph 6.4.

If M10 channel lock nuts (12, Fig. 5-2) have been inserted, or will be inserted, into the rail section mounting channels, make sure that the threaded rod assemblies are fastened to the support structure loosely enough to allow the threaded rod to be screwed into the Twirl nuts. If turnbuckles are used, loosen the lock nut on the turnbuckle bolt to allow the bolt to be screwed into the Twirl nuts.

As the first installer supports one end of the rail section, the second installer supports the opposite end as he places a M10 spring lock washer and a M10 flat washer on the threaded rod or turnbuckle. The rods, or turnbuckle bolts, are then threaded into the M10 channel lock nuts in the rail section mounting channels until they nearly bottom out.

Verify that the rail section is level and adjust threaded rods as required.

6.6 Alignement system run

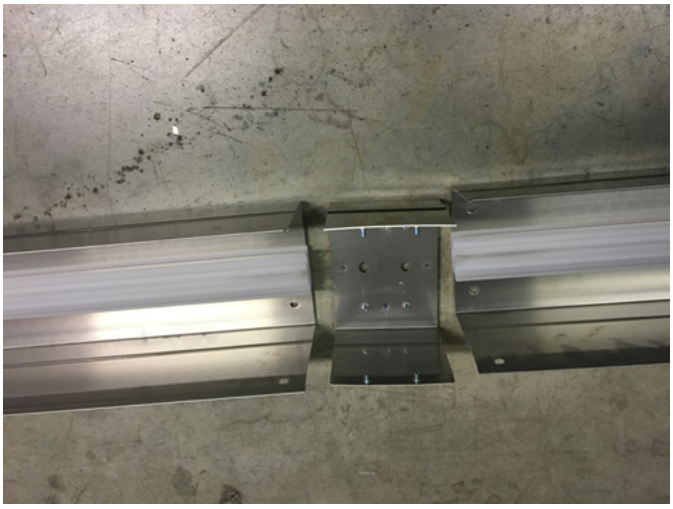
Check for plumb, level, and alignment of each rail section pair before proceeding to install subsequent rail sections. It is extremely important that the first two rail sections be hung as accurately as possible.

6.6.1 Check for level by using a torpedo level at each end and the longest available level placed in several locations along the length of the rails and across their width. To minimize errors caused by a slight bow or arch in the rail, place the level at the end where the next rail section will be joined. Make adjustments by changing fasteners on the threaded rods where they join the support structure.

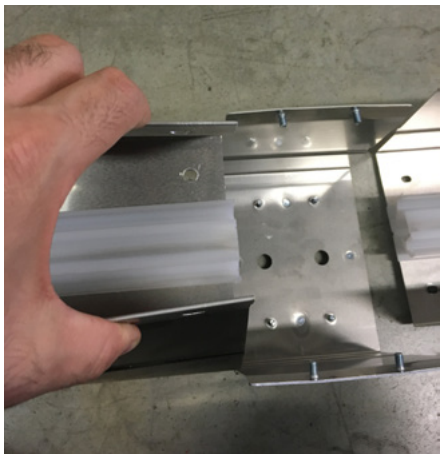
6.6.2 Adjust the alignment of the rails with the string line by sliding threaded rod assemblies in the slotted holes in the channel, or by moving beam clamps or threaded rods on the support structure.

Tutorial for the installation and the assembly of the CurveTrack® rails

1 Start by lining up two rail sections and one aluminum coupler on the floor to fix them as described below.

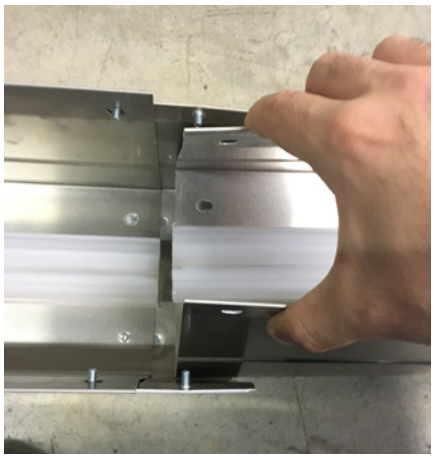


2 To assemble a rail section properly with a coupler you need to:

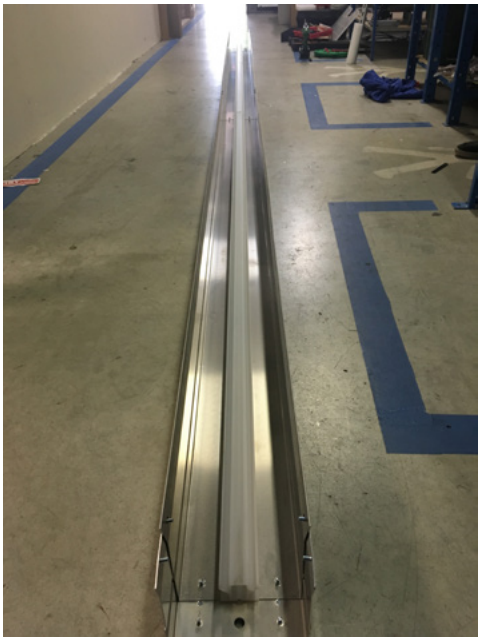


Press the aluminum cap of the rail section

Insert the rail section in the screws of the couplers starting with the top of the rail. Then, adjust the rail section to insert the sides of the cap

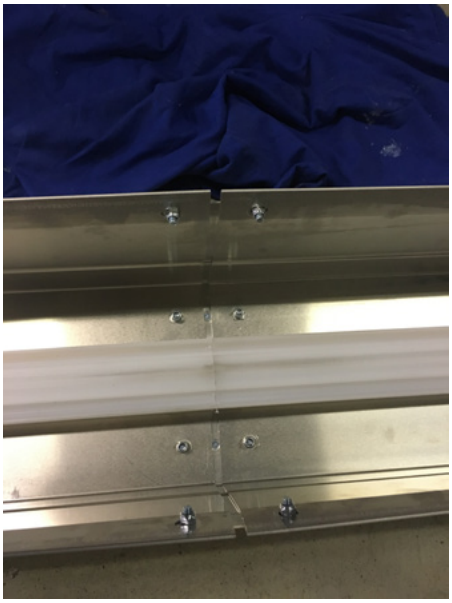


Insert the second rail section at the other extremity of the coupler, following the same procedure.

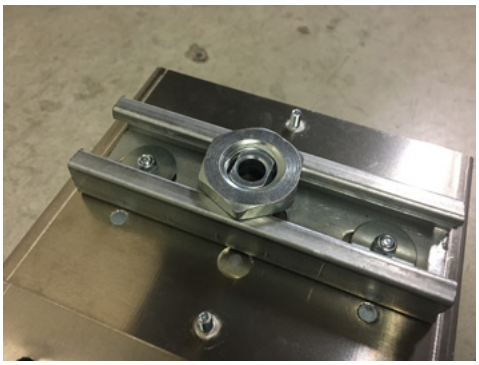


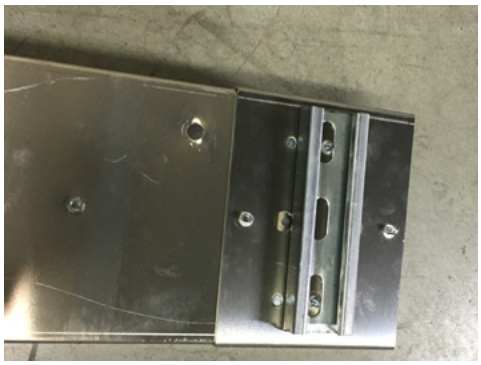
3 Check that the sections are perfectly aligned and then start to fix the nuts without tightening them.

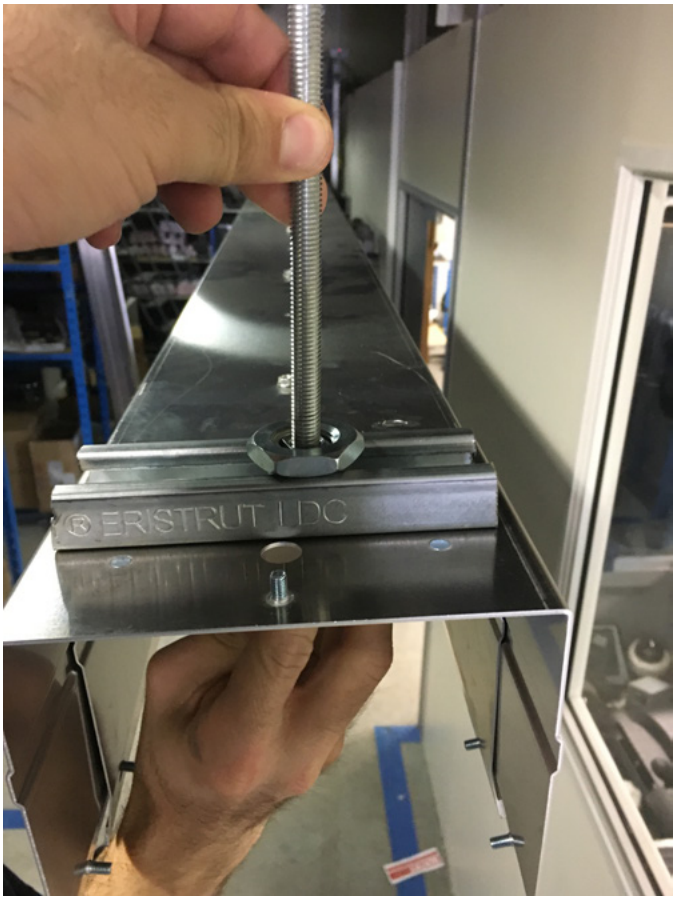
4 Pre-tighten the nuts and when you are sure that the plastic rails are perfectly aligned and pressed one against the other, firmly hold them with one hand. With your second hand, screw the nuts diagonally starting from the sides and then the back.



5 Turn the rail over and fix the strut you have previously cut on the couplers. Then insert a nut in the strut on each coupler



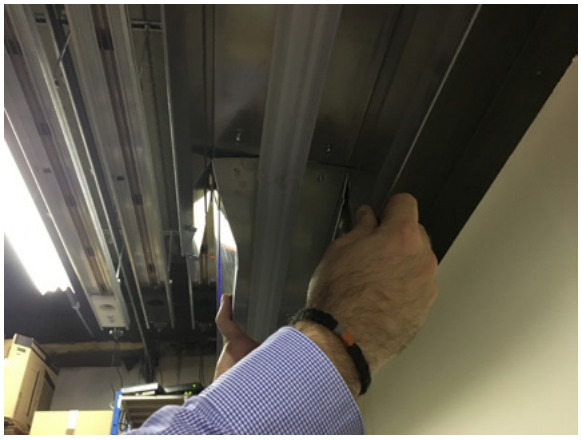


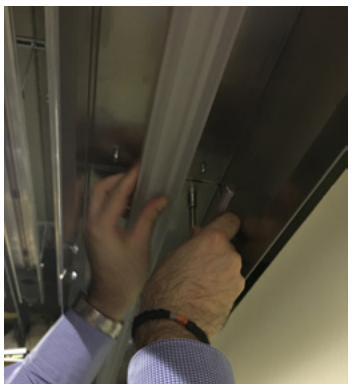


6 Fix the pre-assembled rails on the threaded rods that you have previously installed. Then, adjust with a spirit level to make sure that the rail is perfectly straight and linear.

For the following sections: start again the same process with two sections and one coupler on the floor. Each section assembled two by two is installed one after the other.

7 The installation to the ceiling of each assembled section is done in the same way as before: press the aluminum cap and insert first the top screws and then side screws.





8 Pre-screw the nuts and adjust the plastic rails to make sure that they are well aligned and on the same level. Then you can tighten the nuts firmly holding the plastic rails to avoid any gaps. Still screw the nuts diagonally. Start with the nuts that are on the sides of the plastic rails checking that the space between both sections is the same on each side of the plastic rail.

9 Once you have installed all the sections, you can fix the end caps to both extremities of the rail.

10 Before the installation of the copper pipes, you have to insert shock absorbers at all plastic junctions and all copper junctions. Those are 3M VHB 19mm

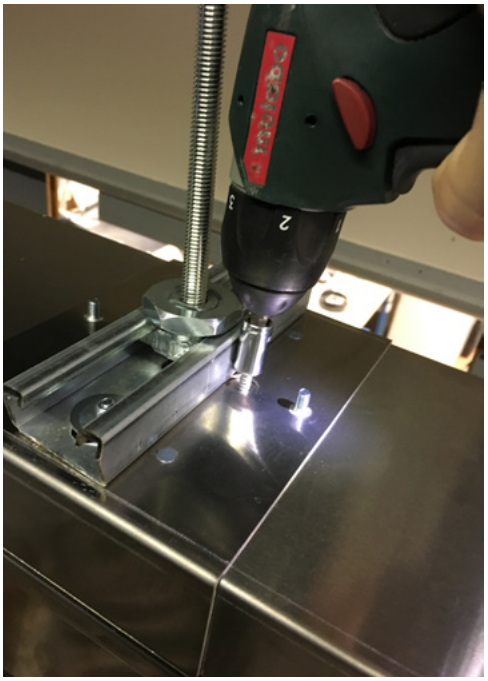
Installation of the copper pipes

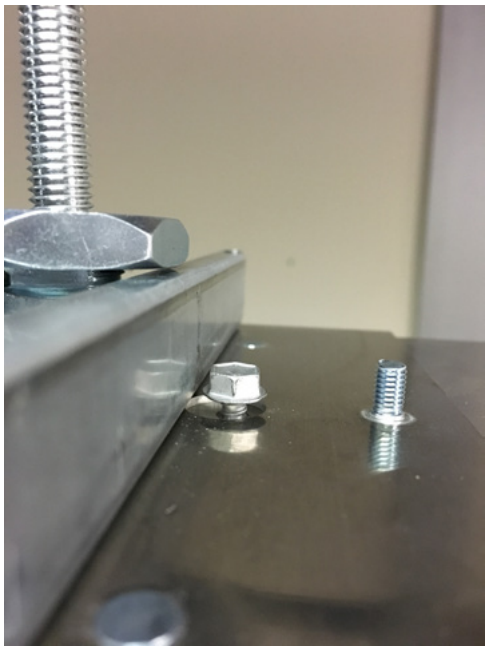
The copper pipes are clipped into the plastic rail on the shock absorbers that wedge them.

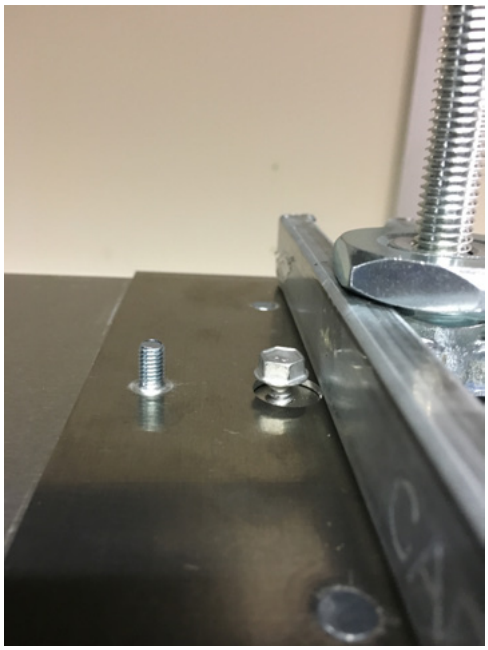
Adjustment:

If you observe an important gap after the installation of the copper pipes you can fix adjustment screws on the junctions. These screws will adjust the plastic rails depending on the screwing depth.

WARNING: never screw the adjustment screws to full capacity. Their only use is to slowly adjust the plastic rails.







Make sure to use a screw-gun set up on a low torque. Always hold the plastic rails with your hand while screwing so you can feel the adjustment and stop screwing in time.

The sanding:

To make sure that the plastic junctions are perfectly smooth you have to sand them with a 120 sandpaper. Repeat this process for all the junctions of the entire rail.

First sand the flat part of the junctions with a sanding block.

Then sand the inside part of the plastic rails to avoid any obstacle on the wheel carriage ways.

6.7 Guy wire suspension

Figure 6-2 shows the recommended method for stabilizing a CurveTrack®™ system run with a threaded rod drop of 1.5 meters or less.

NOTE

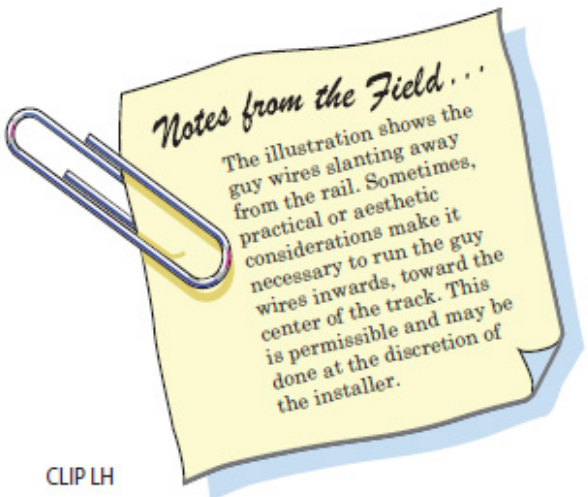
Guy wires must be used in both the center, and at each end, of the rail for systems up to 76 meters in length. An another set of guy wires must be added for each additional 30 meters of length.

6.7.1 Slide M10 channel lock nuts (1, Fig. 6-2) into rail section mounting channels near each end of the system run and, if needed, at the center.

6.7.2 Attach the following components: M10 square washer (2, Fig.6-2), M10 flat washer (3, Fig. 6-2), M10 spring lock washer (4, Fig. 6-2), M10 x 1.5 hex nut (5, Fig. 6-2), M10 x 1.5 x 50mm eye bolt (6, Fig. 6-2), quick link (7, Fig. 6-2), midget– eye turnbuckle (8, Fig. 6-2), 1.5mm aircraft cable (9, Fig. 6-2), and 1.5mm wire rope clips (10, Fig.6-2).

6.7.3 Secure the free end of the cable with U – bolts.

6.7.4 Run the guy wires on a 45 degree angle from the system run, as shown in Figure 6-2.



CAUTION

Tighten turnbuckles until cables are taut, but not so tight as to alter the alignment of the rails.

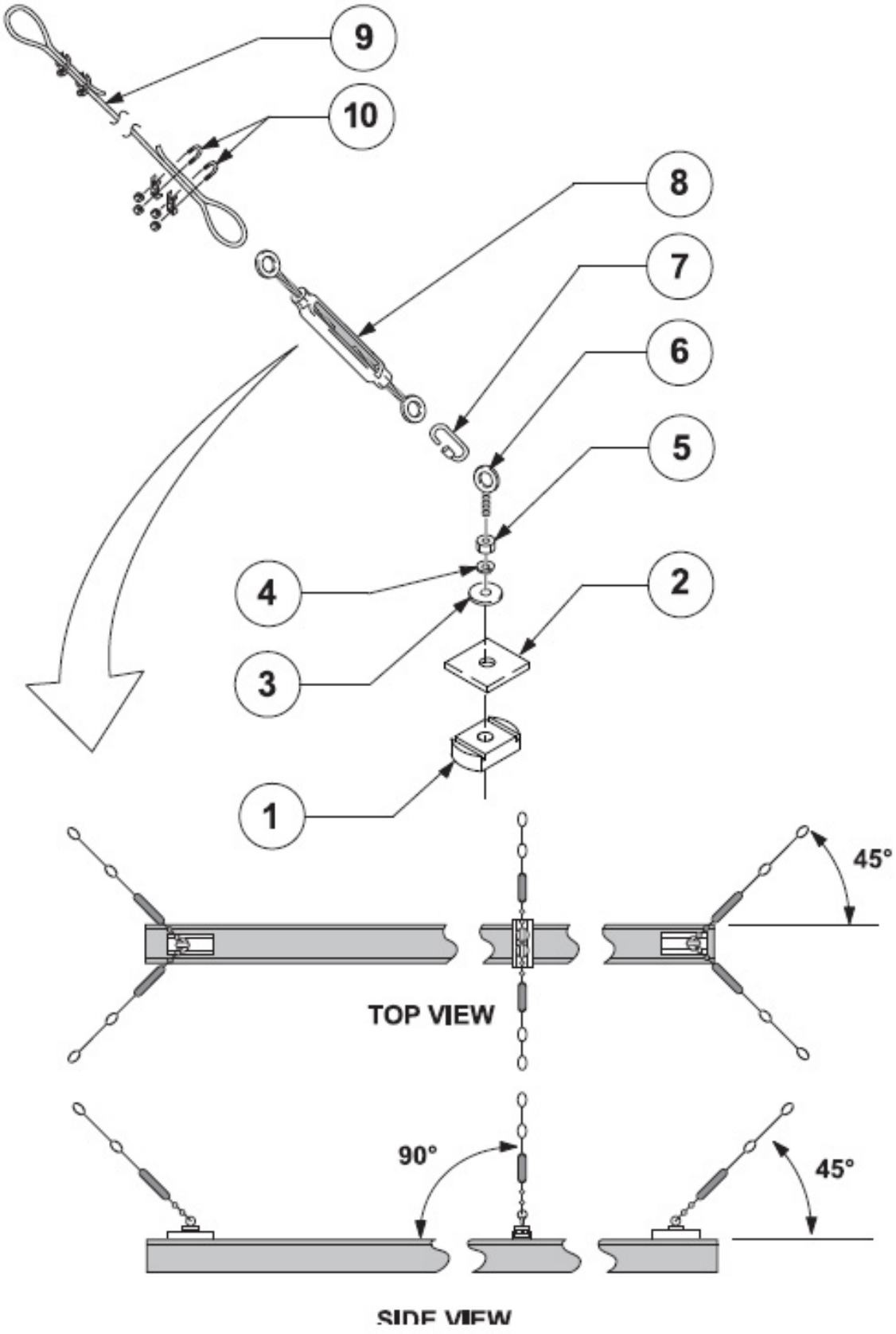


Figure 6-2. Placement of Guy Wires on System Run.

7. Installation of copper conductors

7.1 General

The copper conductors transmit video, power, and control signals between the carriage and the control equipment. Figures 7-1 through 7-3 illustrate the recommended method for assembling and installing the conductors. Before installation, inspect all copper conductors for kinks or deep scratches, and discard those that are damaged. Conductors must be smooth and straight to give optimum transmission. Throughout these procedures, handle the copper conductors carefully with gloves.

Assembling the individual lengths of conductors will be made easier if they are temporarily supported below the rail sections. Use wire, rope, strips of cloth, etc., to improvise slings for the copper conductors. Suspend the conductors in the slings to position them for soldering and insertion in the plastic track as work progresses down the length of the system run.

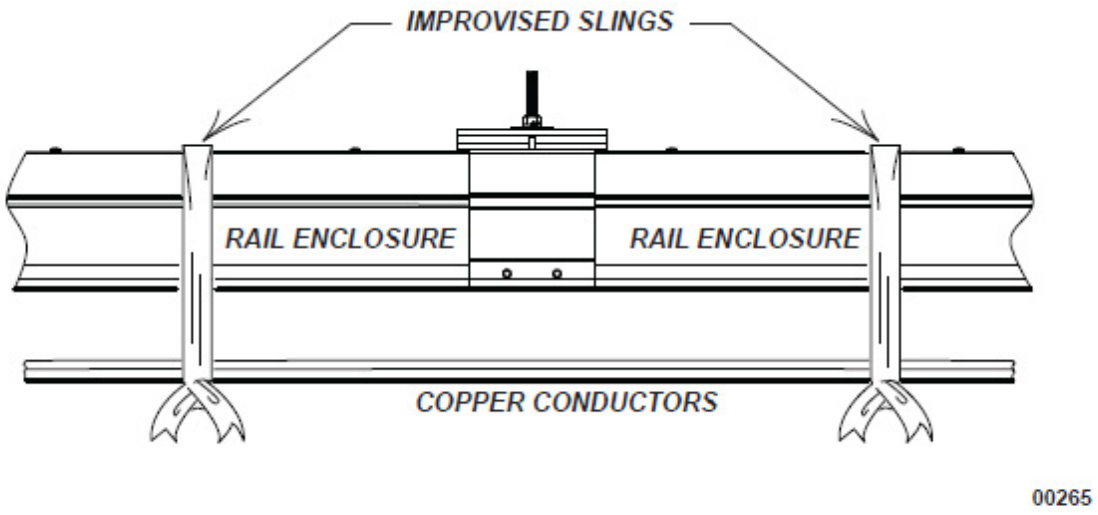


Figure 7-1. Suspending Copper Conductors below Rail Sections prior to Installation.

NOTE

Conductors must be cut square and deburred so that mating ends butt together tightly. If pipe cutters are used to cut the conductors, they will compress the walls of the copper tubing and the inside surface of the conductors will need to be reamed out to permit insertion of connectors and end plugs.

7.2 Soldering copper conductors

It is impossible to overstate the importance of proper copper conductor connector piece (coupler) installation. Each and every connector must be cleaned, fluxed, and soldered in a professional, workmanlike manner in order to ensure conductivity and mechanical functionality. Cutting corners here will result in subsequent service calls to fix problems that are difficult to troubleshoot and expensive to correct.

CAUTION

The solder joints must have a smooth external surface on all sides. The brushes on the camera carriage slide along the copper conductors. Rough or uneven solder joints in a system run will quickly destroy the carriage's brushes. Smooth, straight, and clean copper conductors are essential for long brush life and positive contact that will return maximum signal and picture clarity.

NOTE

Conductors and end plugs are joined using conventional soldering techniques. The end plugs have shoulders (see Figure 7-3) and the joint connector pieces fit completely inside the conductor tubing as shown in Figure 7-2.

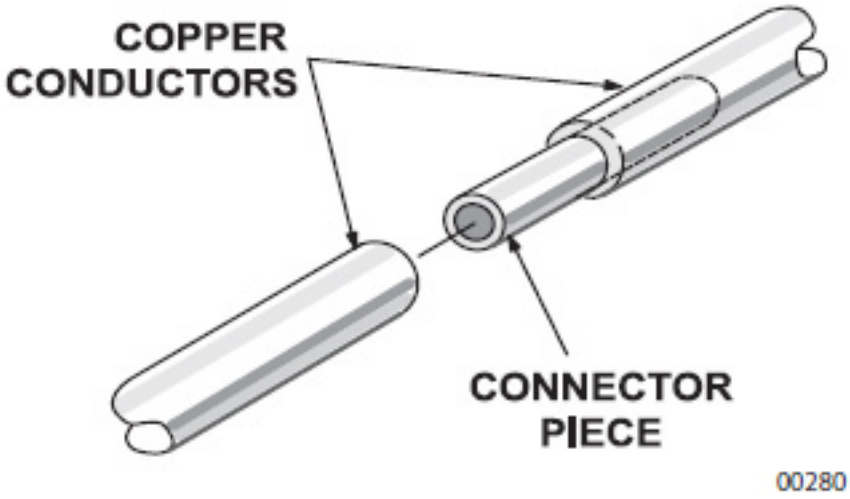


Figure 7-2. Installing Connector Pieces in Copper Conductors.

7.2.1 Clean two connector pieces (Fig. 7-2) and two end plugs (Fig. 7-3), if necessary, with a nonabrasive cleaning pad, and coat lightly with flux.

7.2.2 Install conductor end plugs in one end of the first two copper conductors (Fig.7-3), and insert the connector pieces into the opposite end of the tubing as far as they will go.

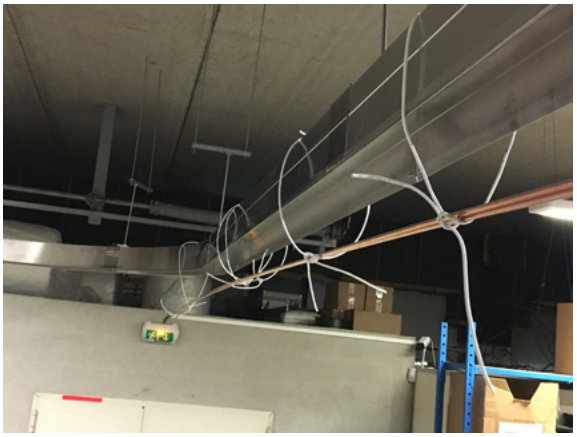
7.2.3 Using a propane torch, heat areas to be joined until solder flows easily into the joint. While solder is still molten, wipe off excess solder with a damp cotton rag or sponge. If excess solder or flux is present, use a plastic non–abrasive pad laid lengthwise along the conductor to remove it.

CAUTION

Uneven solder joints, and / or gaps between conductor ends, will result in noisy carriage operation, electronic interference, and rapid destruction of the carriage brushes. If necessary, use a steel file to even the surface area.

Installation and copper pipe welding tutorial

WARNING: make sure that the copper pipe welding is never in the same place as the rail junctions nor in the curves

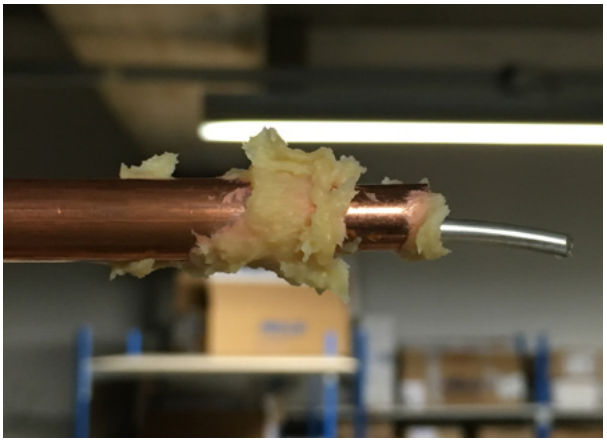


1 Hang up the copper pipes under the aluminum sections (For example with cables)

2 Make sure the copper pipes are well aligned by adjusting the lenght of the support cables

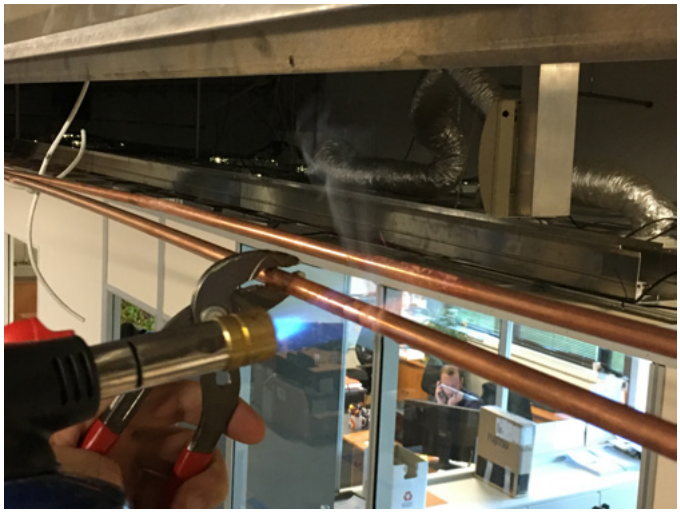
3 Cover the extremity of the copper pipes with the stripper paste and put them closer to make sure that they are well aligned.

4 Cover the extremity of the copper pipes with the stripper paste and put them closer to make sure that they are well aligned. You can then insert the couplers.

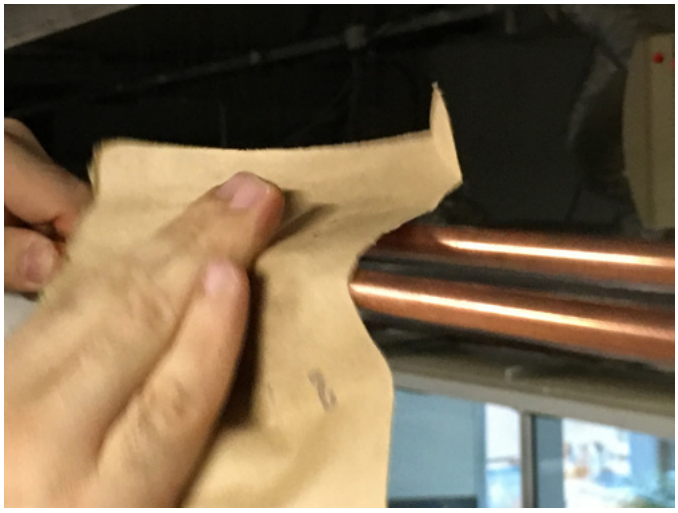


5 Insert the coupler until the middle in one of the pipes and insert the other end in the second pipe. Make sure that the coupler does not move and is inserted correctly in each pipe.

6 Start to heat the coppers with a welding torch. You need to press both pipes one against the other. Make sure that the pipes are perfectly aligned and straight without any space at the junction. You can stop heating as soon as you start to see the silver colour at the junction. Then, immediately apply a wet sponge to the copper pipes to take out the excess tin. Check that there is no defect around the junction.



7 When the copper has cooled down you have to sand it at the junction with a sandpaper of 80. Make sure that the copper junction is perfectly smooth and that you do not see any defect.



7.3 Inserting Conductors into Plastic Track

NOTE

The copper conductors should be pressed into the plastic track sections only after the solder joints have been allowed to cool and the joints have been inspected and smoothed as necessary.

7.3.1 Raise the first two conductors up to the first rail section and snap them into the plastic track. The conductors should be positioned with the end plugs protruding approximately 12mm from the beginning of the plastic track in the first rail section.

7.3.2 Proceed down the length of the system run soldering connector pieces between conductor lengths, smoothing joints, and pressing conductors into the track.

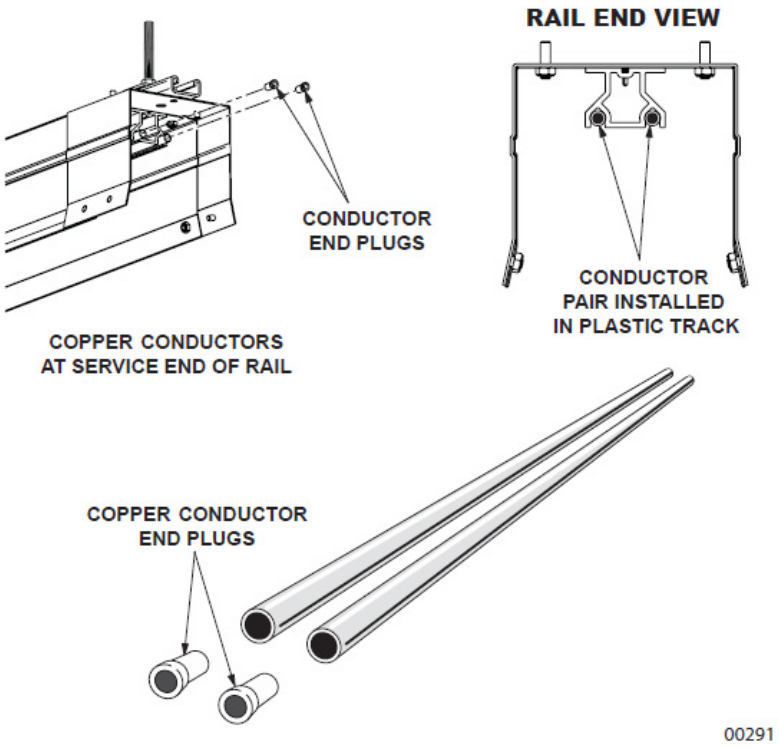


Figure 7-3. Installation of Copper Conductors.

7.3.3 Allow 0.5 in. (12mm) of clearance between the end of the conductors and the end of the final track section on the Terminator board end of the system run. Hold the two conductor ends together and, using a hacksaw, remove the excess copper squarely.

7.3.4 De-burr the conductor end surfaces.

7.3.5 Solder both end plugs in place.

8. Installation of bumper stop brackets

8.1 General

Bumper stop brackets are installed at each end of the system run. These brackets are fastened inside the first and last rail couplers. They serve two purposes. Their primary function is to provide a margin of safety in the event of a limit switch failure resulting in the carriage striking either end of the system run. (A foam bumper is butted up against the inside of the bumper stop inside the rail for added protection.) The bumper stop bracket at the service end of the system run also provides two of the four mounting points for the RF Adapter PCB. Both bumper stop brackets provide mating mounting holes for the captive fasteners in the End Caps.

8.2 Installation

8.2.1 Hold the bracket with the top at a slight outward angle, position the bumper stop bracket over the ends of the copper conductors so the end plugs protrude from the aperture in the bracket.

8.2.2 Square up the bracket and push it straight up until the threaded studs in the rail coupler align with mounting points on the bracket and secure with four nylon insert lock nuts.

8.2.3 Repeat the procedure for the second bumper stop bracket.

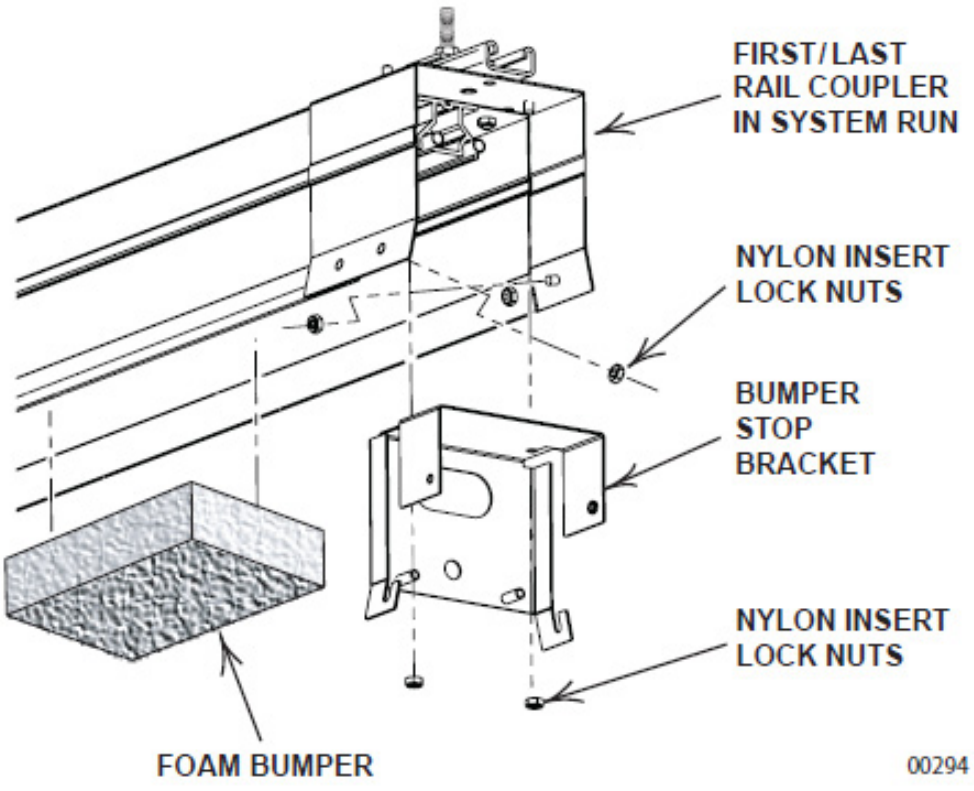


Figure 8-1. Installation of Bumper Stops at each end of the System Run.

9. Installation of RF adapter and terminator boards

9.1 RF Adapter PCB Installation (See Figure 9-1)

9.1.1 Align the top, unthreaded hole on each extension bar with the corresponding hole in the conductor end plug and install a screw with captive washer in each. Do not tighten either screw yet.

9.1.2 Face the component side of the RF Adapter PCB down the system run. Align the two corner holes on the top edge of the PCB with the standoffs on the bumper stop bracket. Install and tighten two screws with captive washers.

9.1.3 Rotate the extension bars slightly to align the threaded bottom hole on each bar with the corresponding center slots in the top edge of the PCB and install, but do not tighten, a screw with captive washer in each slot. Next, tighten the screws in the conductor end plugs. Then, lift the two conductors as far upward as possible and tighten the screws in the PCB slots

9.2 Terminator board installation

9.2.1 At the opposite end of the system run, position the Terminator PCB against the conductor end plugs with the PCB components facing away from the system run.

9.2.2 Install and tighten two screws with captive washers to secure the PCB.

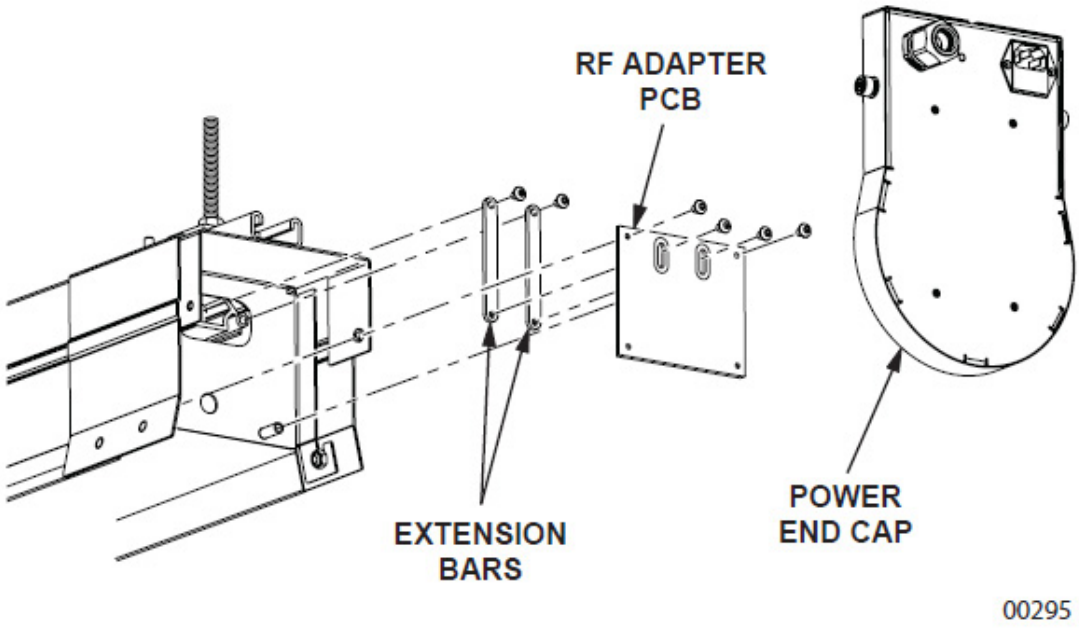


Figure 9-1. Installation of RF Adapter PCB.

10. Installation of limit switch actuators

10.1 General

Limit Switch Actuator Magnets are detected by the camera carriage as it travels back and forth on the plastic track inside the rail enclosure. The two actuators are to be inserted into holes drilled in the plastic track at opposite end of the system run–– one at the RF Adapter end, and one at the Terminator end. The limit switch actuators tell the carriage at which end of the rail it is located.

Observe the placement and relative polarity of the two limit switch actuator magnets as shown in Figure 10-1. Each actuator is to be located at the distance shown in the Figure from its respective bumper at each end of the rail.

10.2 Installing limit switch actuators

10.2.1 Refer to Figure 10-1, and locate and mark the center of the plastic track where the magnets are to be installed. Be certain the mark is centered on the track.

10.2.2 Drill a 6.35 mm hole through the bottom surface of the plastic track where the marks have been made.

10.2.3 Note that the North end of each magnet is painted black, and the South end is painted red. Being careful to observe correct polarity, press a Limit Switch Actuator Magnet into each hole until the bottom of the magnet is flush with the surface of the plastic track.

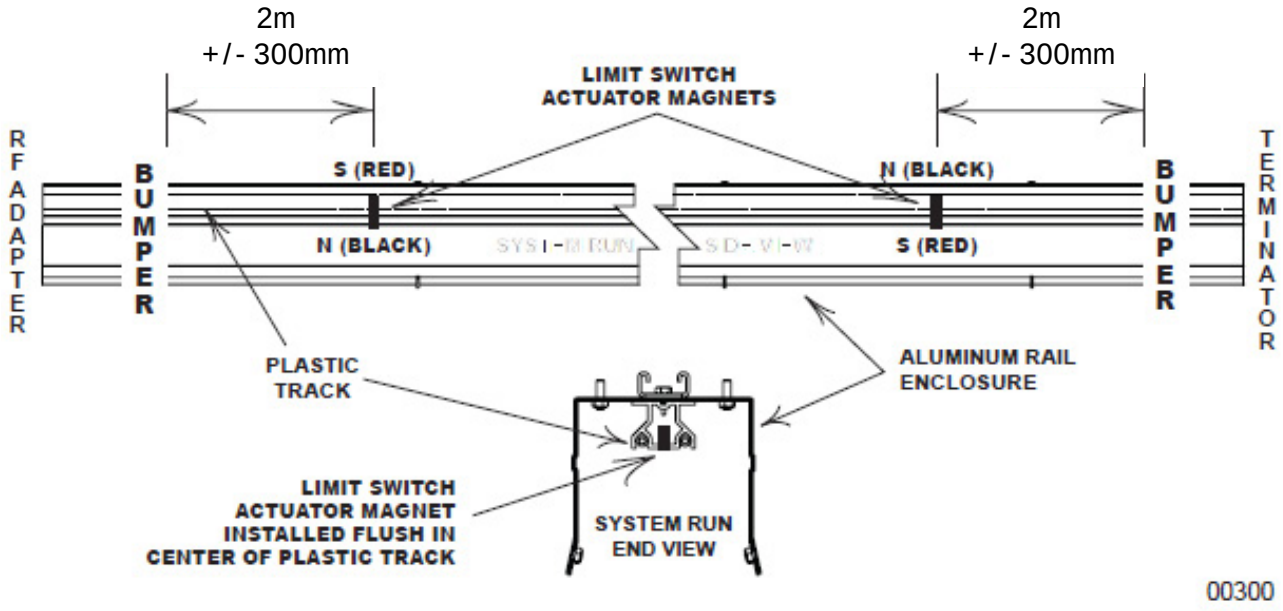
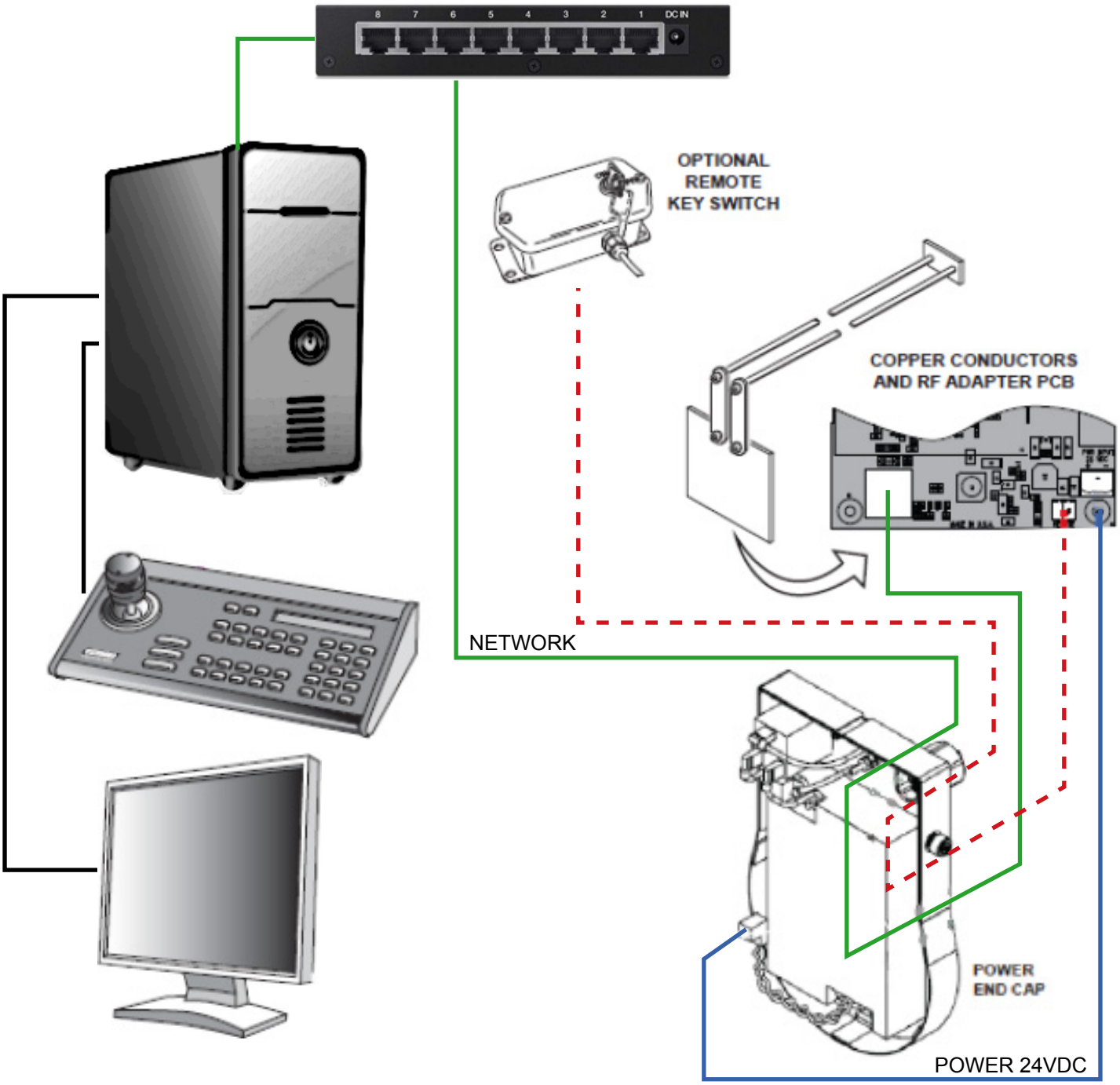


Figure 10-1. Orientation of Limit Switch Actuators on the System Run..

11. System cabling with power end cap assembly



12. Installing the carriage

12.1 Carriage inspection

CAUTION

To avoid damaging the carriage, lift the top foam insert straight upwards.

12.1.1 Separate the preformed foam packaging inserts and remove the carriage.

CAUTION

Any time you lift the carriage, it must be supported with both hands. Lift the carriage by the frame ONLY! Do not apply any lifting forces to the pan and tilt assembly or to the electronics enclosure. Do not rest the carriage on the brushes, pan and tilt assembly, limit switch, or slip ring. If the carriage must be rested on a hard surface, lay it GENTLY on its side. Alternatively, lean the carriage on end against the wall.

12.1.2 Remove the carriage from its plastic bag and place the carriage on the protective padding in the same relative position in which it will be installed.

12.1.3 Inspect the carriage for obvious damage and immediately report any defects.

12.2 Installing the carriage in the system run

12.2.1 Remove the foam bumper from the service end of the system run.

12.2.2 Disconnect system wiring routed through the end cap cable bushing.

CAUTION

If applicable, disconnect the 24VDC Output cable from the RF Adapter PCB before removing the Power End Cap from the rail in step 13.2.3.

12.2.3 Unscrew the two captive fasteners and remove the Power End Cap, if installed, from the service end of the system run (the RF Adapter PCB end of the rail).

12.2.4 Remove the two screws with washers securing the extension bars to the copper conductor end plugs.

12.2.5 Remove the Nylock nuts securing the bumper stop bracket to the end rail coupler, and remove the bumper stop bracket, the extension bars, and the RF Adapter PCB from the rail as a single unit.

12.2.6 Raise the carriage so it is level, and the drive roller is toward the front.

12.2.7 Gently begin to insert the carriage so that the front idler wheels rest on the lower edges of the plastic track.

12.2.8 Use your fingers to press and hold the brushes down in the brush holders.

12.2.9 Continue to guide the carriage into the system run until the rear idler wheels are resting on the lower edges of the track. Push the carriage up the track until the rear guide wheels are inside the enclosure. At this point, verify that thefour brushes are contacting the copper conductors.

12.3 Inspecting the system run

12.3.1 Walk the carriage slowly down the full length of the system run with a flashlight and observe the following:

a. The drive roller should always be rotating — not skidding and not stopping (which would indicate that the roller is not in contact with the plastic track).

b. All the idler wheels must rotate freely.

NOTE

The carriage must smoothly traverse the entire length of the system run with no resistance caused by factors such as, plastic track warpage, rail section misalignment, copper conductors not fully seated, etc.

12.3.2 If a defect is noted during the preceding steps, or if the carriage does not perform as indicated, the problem must be identified and corrected before the system is energized.

12.3.3 Reinstall the bumper stop bracket, RF Adapter PCB, and extension bars as a unit. Secure the assembly with the four Nylock nuts holding the bracket and the two screws with washers joining the extension bars to the conductors.

12.3.4 Reinstall the end cap, or Power End Cap, as applicable, and re-connect system wiring removed in step 13.2.2.

12.3.5 Reinstall the foam bumper against the bumper stop bracket.

13. System initialization and powering up

13.1 Power up / Initialization

CAUTION

Before powering up the system, make certain that foam bumpers are installed on each end of the system run.

Upon initialization, the carriage calibrates the camera and then travels down the rail toward the Terminator end of the system run. Once the carriage reaches the far-end bumper, the carriage stops, reverses direction, and begins searching for the Limit Switch Actuator magnet and the bumper at the RF Adapter end of the system run.

With the carriage operating in AutoMode, verify that the DC voltage on the copper conductors is between 23 VDC and 24 VDC.

13.2 Programming instructions

Refer to the « Programming instructions CT V2 001 » file.

14. Windows

14.1 General Description. (See Figure 15-1)

The window material used on the VideoSentry system is a PET (Polyethylene terephthalate) film approximately 0.2032 mm thick. It is supplied to the job site on 304 mm wide, 30.5 meters long rolls. The window material has a mirror finish applied to one side. The mirrored side will be on the outside when the windows are hung.

The window material is pre-punched along both edges every 0.6 meters for the entire length of each roll. The rectangular punches are there to accommodate the clips that will be used to hang the window from the aluminum rail enclosure. The clips go through the window holes and are then pressed upwards onto the bottom edges of the enclosure.

There is a clear protective film on both sides of the material to prevent scratches and minimize fingerprints. These film sheets must be removed as part of the installation procedure before clips are installed in the rectangular punched holes. Be especially careful to protect the window material from damage after the protective film sheets have been removed.

CAUTION

Two persons are required to simultaneously hold the window, bend the plastic material, and steady the rail sections to prevent the rails from being pushed out of alignment.

CAUTION

Care must be taken to avoid bending or folding the window material. Any creases in the mirrored surface will be obvious and permanent.

14.2 Window installation on straight rails

14.2.1 The window material will need to be cut into manageable lengths, around 3 to 4.5 meters, prior to peeling off the protective films.

14.2.2 Install the window clips in the punched holes along one edge of a single window segment and clip the window segment to the lower edge of the rails.

14.2.3 Install the window clips in the holes along the remaining, free-hanging edge of the window segment.

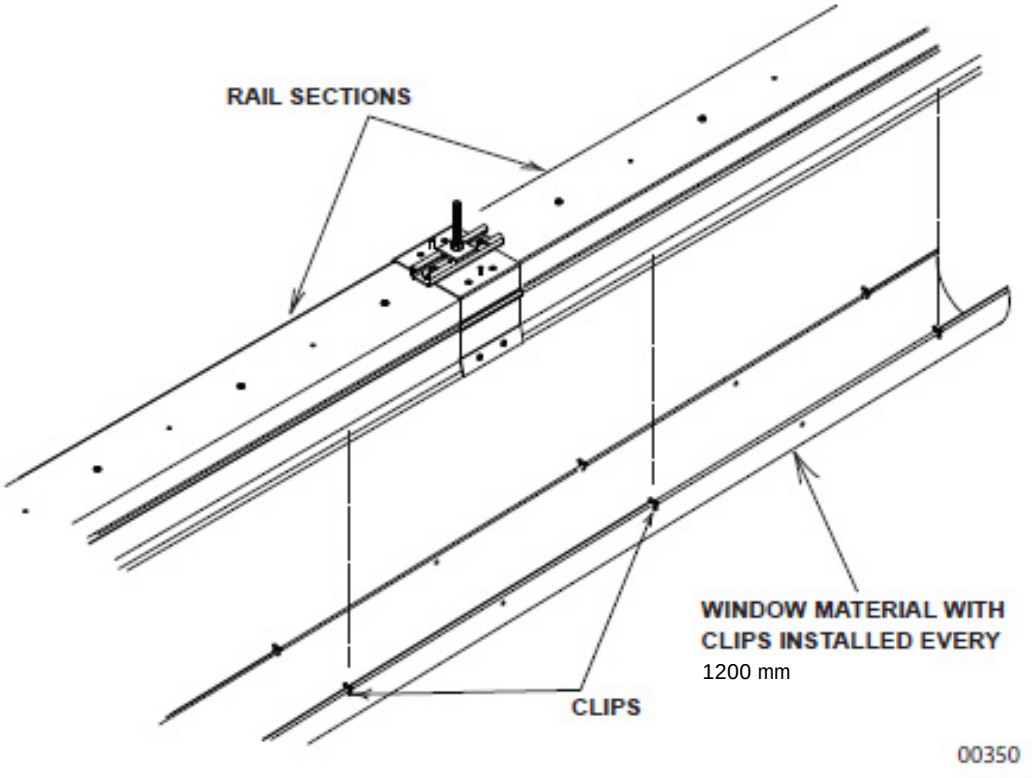


Figure 15-1. Window Installation.

14.2.4 Gently bend the window material up and around and clip it to the rail sections using the clips installed in the window's punched holes in the previous step.

14.2.5 Continue down the system run, installing window segments in the manner described. Wherever one segment ends and another begins, the adjoining segments must be overlapped as shown in Figure 15-2.

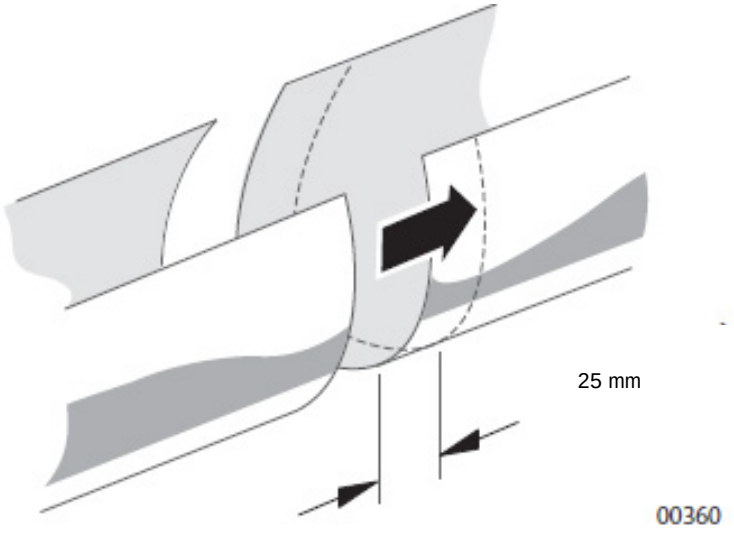


Figure 15-2. Overlap Adjoining Window Sections.

14.3 Window installation on curve sections of rail

Installing window on curved sections of rail necessitates that the window material be cut into short, rectangular pieces approximately 180 mm wide. Each segment requires two holes to be punched on each outside edge to accommodate four clips per segment. Each 45 degree curve in the system run will require approximately 11 window segments depending upon how much the segments are overlapped. The curved rail segments should overlap slightly less than the 25 mm shown in Figure 15-2. Keep in mind that the overlap on the inside of the curve will always be slightly more than the overlap on the outside.

Based on the planned configuration of the system run, the required number of window segments will have been calculated beforehand, cut, punched, and delivered to the work site with the rest of the system.

14.3.1 Remove the protective film from both sides of each window segment.

14.3.2 Install four clips on the first window segment, and fasten the segment to the rail at the beginning of the curve.

14.3.3 Install four clips on the second window segment, and fasten the second segment to the rail being careful to incorporate sufficient overlap of the first window segment.

14.3.4 Continue to work your way around the curve, installing and overlapping window segments, until complete.

16. Field replaceable parts list

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VIDEOSURVEILLANCE SYSTEMS

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