

DELTA

PREVENTION

VSS SYSTEM Installation Guide



MANUFACTURER'S RECOMMENDATIONS

1. RAILING SHOULD BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTALLATION GUIDE AND INSPECTION CRITERIAS
2. RAILING CAPACITY IS BASED ON NATIONAL BUILDING CODE. SEE STUDY REPORT AND TESTING BY PGA EXPERTS INC. DONE ON 2016-02-03.
3. SEE ITEM #2 - TEST PROTOCOL OF THE REPORT IN ORDER TO OBTAIN THE PARAMETERS (CAPACITY)
4. DISTRIBUTOR IS RESPONSIBLE TO CONFIRM THAT THE RAILING USED COMPLIES WITH APPLICABLE LOCAL HEALTH AND SAFETY STANDARDS.
5. NO OTHER LOADS SHOULD BE APPLIED TO THE SYSTEM FROM OVER ACCUMULATION OF SNOW/ICE, BANNERS, FLAGS, INFILL PANELS, OR ANY TYPE OF PERSONAL FALL ARREST SYSTEM.
6. RAILING MUST BE INSTALLED AT A MINIMUM OF 12" FROM THE EDGE OF THE ROOF IF THERE ARE NO PARAPETS.
7. THE RAILING IS NOT INTENDED FOR AREAS WITH PUBLIC ACCESS OR LARGE GATHERINGS OF WORKERS
8. WHEN ACCESSING THE CGS WORK AREA, FOLLOW THE SAFETY PERIMETER OR WALK AT MINIMUM 2 M (6'6") FROM THE EDGE
9. THE SURFACE WHERE THE POSTS AND COUNTERWEIGHTS WILL BE INSTALLED MUST BE FREE OF ALL DEBRIS AND ALLOW SUFFICIENT ADHESION TO AVOID SLIDING OF THE GUARDRAIL. IN CASE OF BALLASTED ROOF SYSTEM, THE BALLAST STONE MUST BE REMOVED IN ORDER TO INSTALL THE COUNTERWEIGHT BASES ON THE ROOF MEMBRANE.

MANUFACTURER'S RECOMMENDATIONS

STORAGE AND HANDLING INSTRUCTIONS

Maintain manufacturer packaging during the handling and hoisting of material. Do not unpack the material before it's in position at the final installation site. Always respect proper rigging techniques, operations guideline and load charts of the equipment used to lift the material on the roof. Always be mindful of the wind while lifting material on the roof.

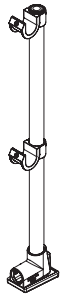
Material can be stored inside or outside under normal conditions. Do not stack other material on top of the skids or bundles. Components and products packaged in cardboard boxes should be stored inside in dry areas.

REPAIR AND MAINTENANCE INSTRUCTIONS

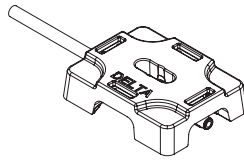
The Delta Prevention system is backed by a 10-year warranty. Absolutely no repair or modifications should be done to the components without the written approval of the manufacturer. Unapproved repairs or modifications will immediately void the warranty and compromise the compliance of the system.

The systems should be installed according to the manufacturer's installation instructions and kept properly installed during their full lifetime. The system may be disassembled in case of repair or modification to the building, but it must be reinstalled according to the manufacturer's instructions. An annual visual inspection of the system is recommended to ensure its integrity. The retightening of the connector's set screw beyond their original torque setting is not recommended.

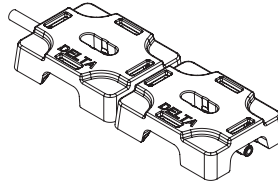
PARTS



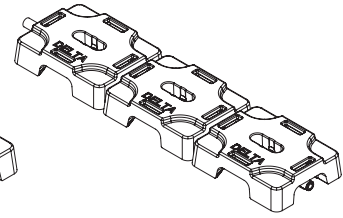
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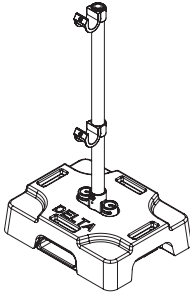
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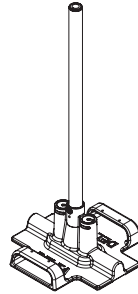
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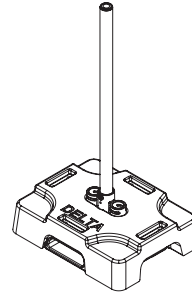
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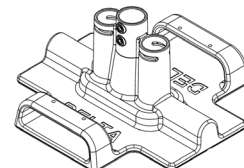
CPA20002



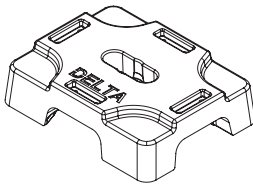
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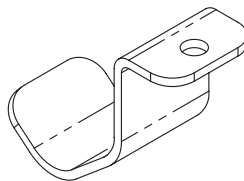
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EAA05-01



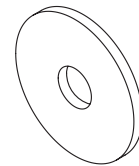
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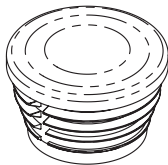
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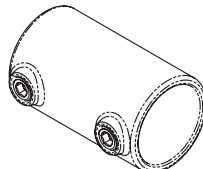
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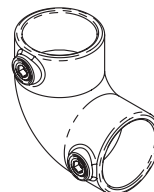
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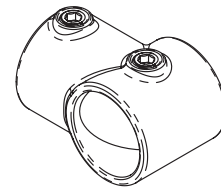
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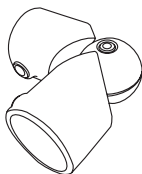
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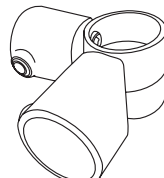
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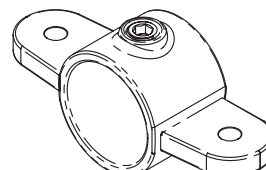
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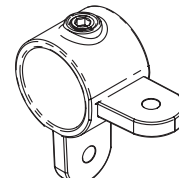
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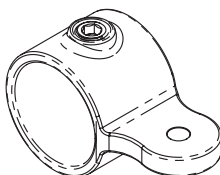
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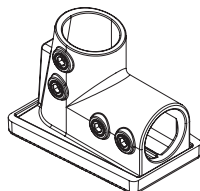
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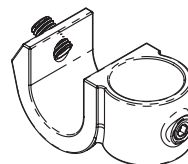
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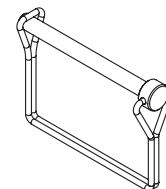
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GA200-01

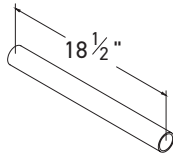


GA201-01

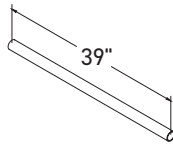


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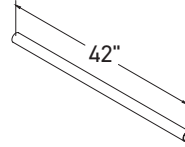
PARTS (CONTINUED)



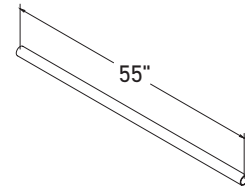
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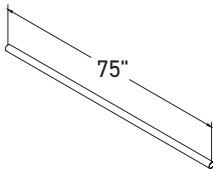
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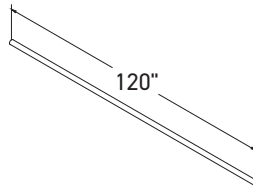
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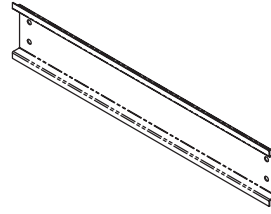
FAA12-01



FAA13-01



FAA06-01



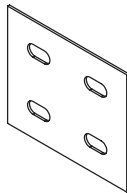
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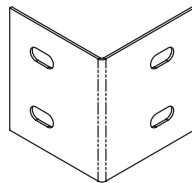
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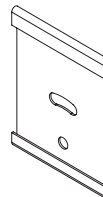
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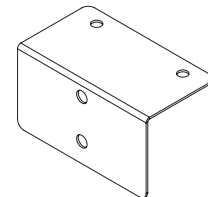
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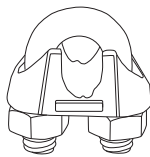
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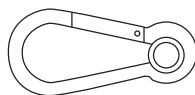
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BAA48-01



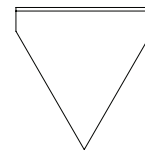
DAA27-01



DAA44-01



DAA26-01



BAA14-01



BAA16-01



BAA18-01



NOTICE

- Pipes are delivered in 10' (120") lengths. 20' (240") pipes are available on demand only.
- Please contact our customer service team for the complete list of components.

TOOLS



Cordless hammer drill
(20V battery recomm.)



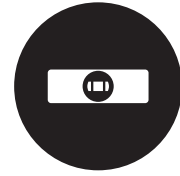
$\frac{7}{16}$ " socket



$\frac{5}{16}$ " Allen socket



Measuring tape



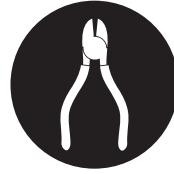
Level



Torque wrench



Cutting tool
for tubes



Cutting pliers



OPTIONAL :
 $\frac{1}{2}$ " socket
for kick plate



OPTIONAL :
 $\frac{1}{2}$ " socket for the
installation of the
GAT24A self-closing
safety door



OPTIONAL :
 $\frac{5}{16}$ " Allen socket for
the adjustment
of the GAT24A
self-closing
safety door

PERSONAL PROTECTIVE EQUIPMENT



Helmet



Goggles



Boots



Harness

VSS CLASSIC

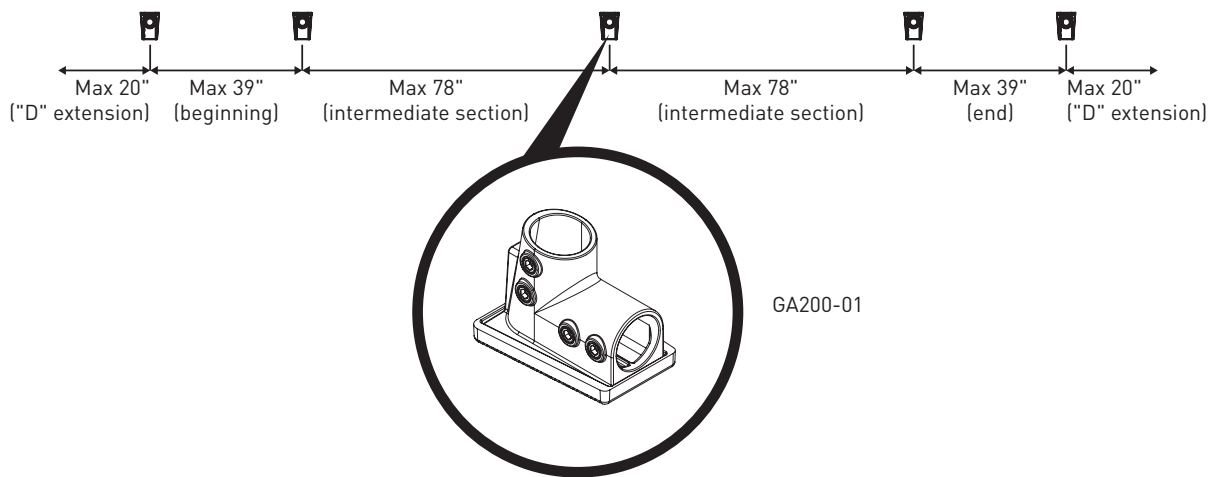


NOTICE

- In case of an installation on a roof without parapet, the guardrail must be installed at a minimum of 12" from the edge.
- A corner should be followed by a post with counterweight at no more than 12" of distance. If this is not possible, a single post (VPA420001) should be used.
- A corner guardrail must have at least a 4'4" side and an 8'8" side.

1

Lay out the GA200-01 bases according to the following maximum distances to ensure compliance with installation standards. These distances can be shortened in case of obstacles.

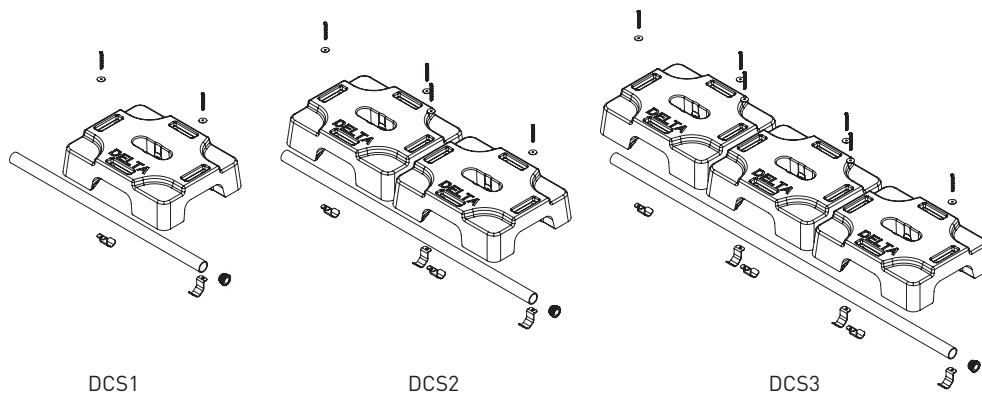


Note: for a 10' guardrail, refer to page 10.

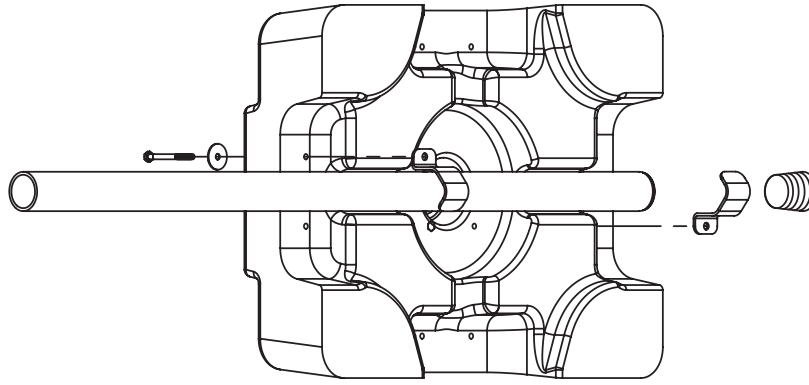
2

Assemble each DCS1, DCS2 and DCS3 by tightening the DAA35-01 with the hammer drill and the $\frac{7}{16}$ " socket in order to reach the compaction point of the BAA13-01 base. The tube end with the BAA12-01 plastic cap must be at the opposite of the GA200-01 base.

2.1



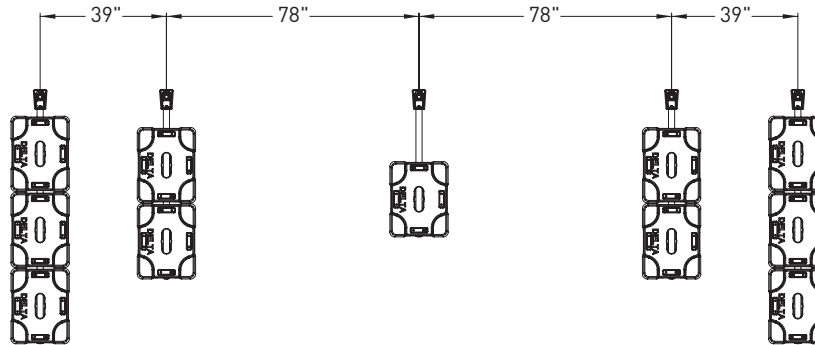
2.2



Tip: place the BAA13-01 base on its side to easily install the FAA11-01, FAA12-01 or FAA13-01 tube using the EAA06-01, the DAA35-01 and DAA36-01.

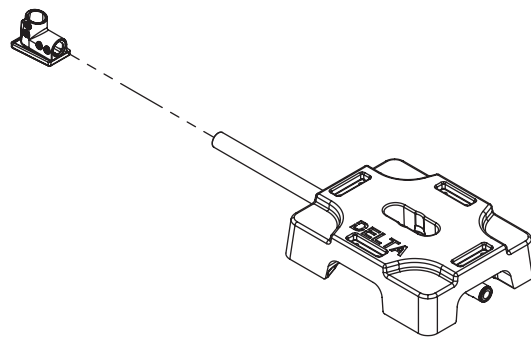
3

Lay out the DCS1, DCS2 and DCS3 assemblies towards their GA200-01 respective base.



4

Insert the DCS1, DCS2 and DCS3 assemblies in their respective GA200-01 base leaving enough space to sit the VPS42 vertical post (step 5) at the bottom of the base.

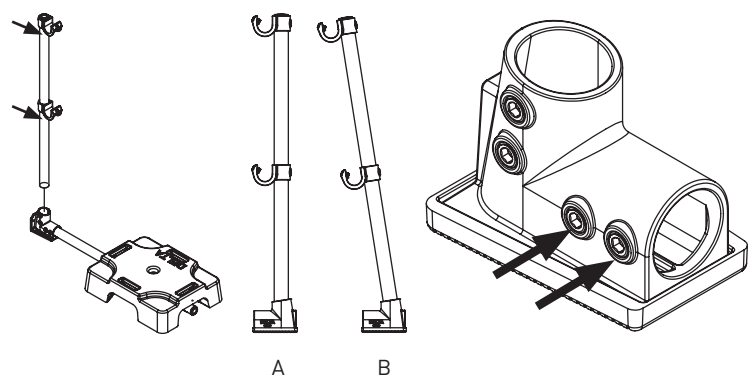


5

Insert the bottom of the VPS42 post in the GA200-01 base. The GA200-01 allows two types of installations:

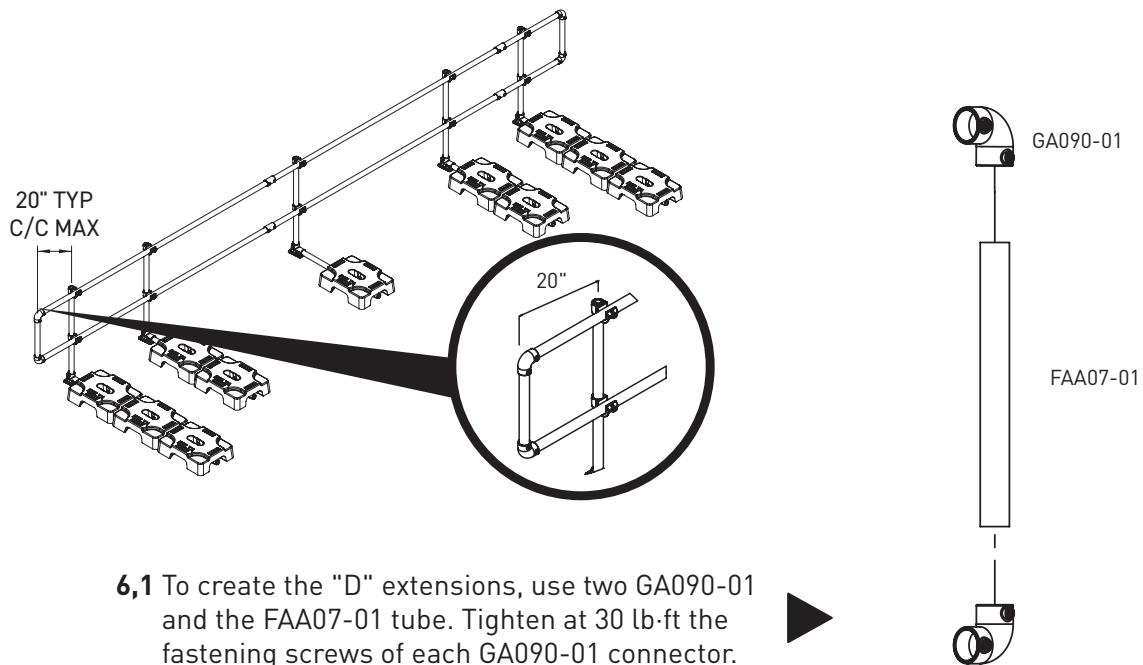
- Straight: the post must sit straight at the bottom (A)
- Angle at 10°: the post must sit on the internal guiding bump (B)

Tighten at 30 lb/ft the two bottom set screws of the GA200-01



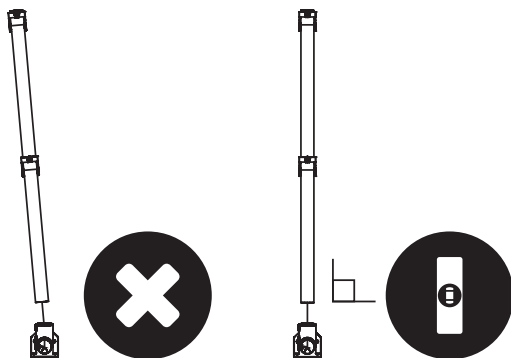
6

Insert the FAA06-01 tubes in the upper and lower GA201-01 to create the handrail. A 20" section will be required at both ends to create the "D" extensions. Trim the tube according to the desired length of the guardrail. Use the GA010-01 connector to connect two tubes.



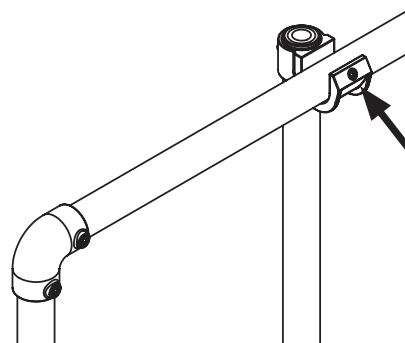
7

Level the VPS42 and tighten at 30 lb·ft both fastening screws



8

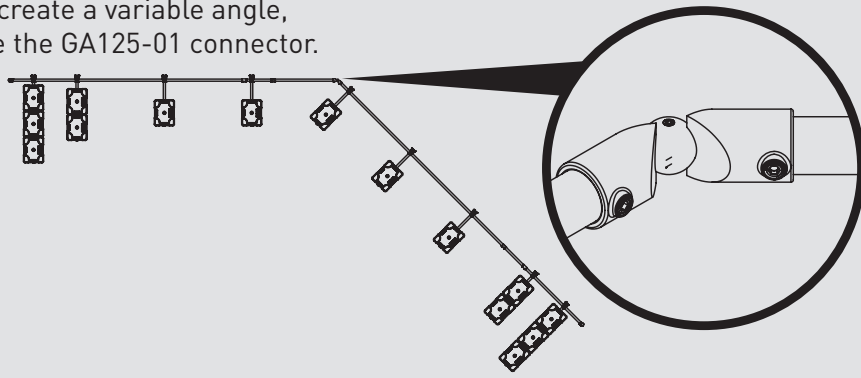
Tighten at 20 lb·ft the fastening screws of all the GA201-01 to secure the handrail.





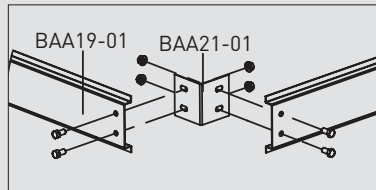
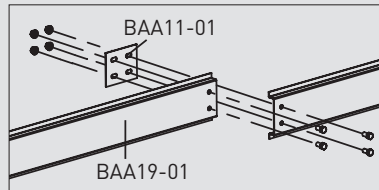
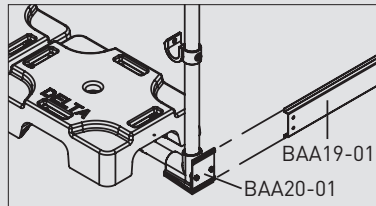
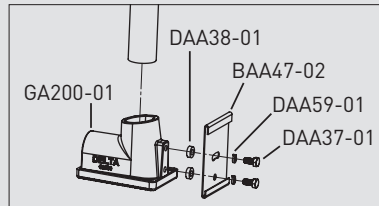
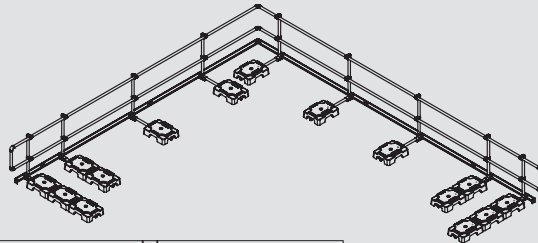
OPTIONAL – Guardrail with angle.

To create a variable angle, use the GA125-01 connector.

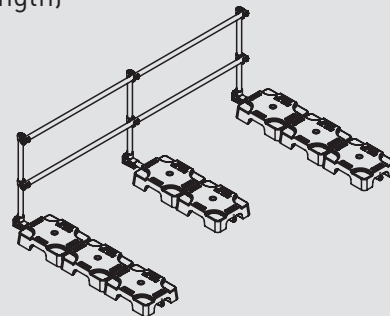
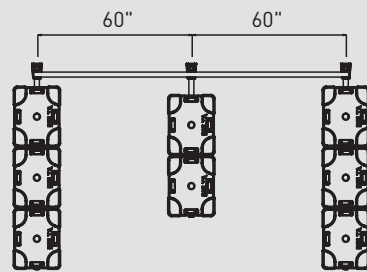


OPTIONAL – Kick plate.

When necessary, the addition of a kick plate is possible with the VSS CLASSIC.

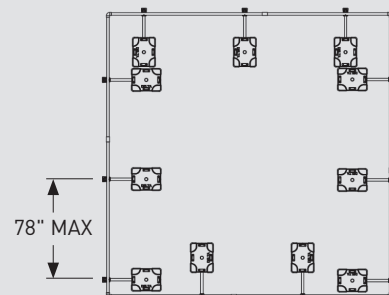


OPTIONAL – 10' Guardrail (minimum length)



OPTIONAL – Closed VSS Classic

To create a closed system with the VSS Classic, only the DCS1 with a post spacing of 78" are required.



VSS COMPACT

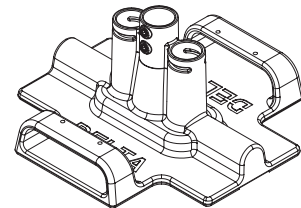
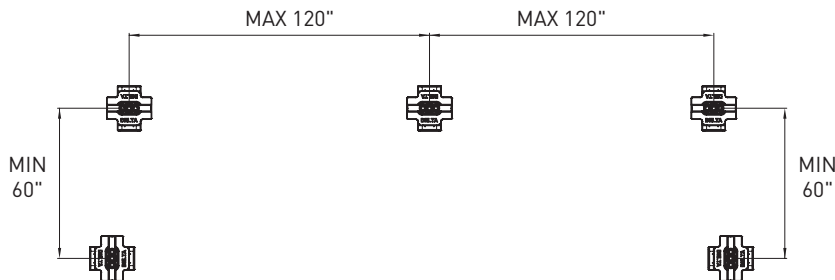


NOTICE

- 60" long full height returns are mandatory AT BOTH ENDS ONLY.
- Returns don't have capacity and should not be considered as fall protection. Therefore, they must not be facing an unguarded edge.
- A CPA20002 post must be positioned at each corner or direction change.
- On a roof without parapet wall or curb to prevent sliding:
 - The guardrail must be installed at 12" from the edge
 - Additional 60" returns must be added at every 40' and connected to the main rail by GA101-01 clamps.

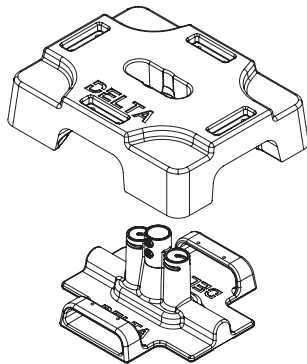
1

Lay out a EAA05-01 base every 10' maximum, at each corner and each end according to your configuration.



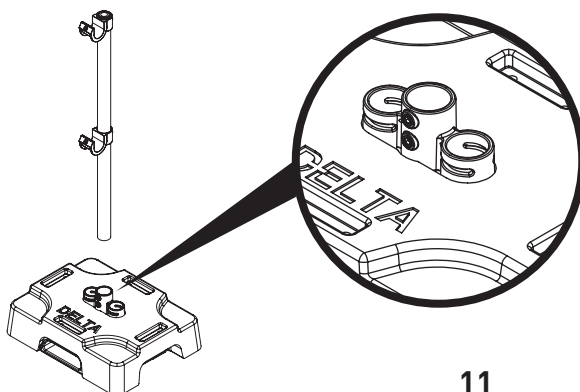
2

Insert the BAA13-01 rubber bases on the EAA05-01 bases.



3

Insert the vertical post in the EAA05-01 sleeve and tighten the set screw to **15lbs/ft** using the torque wrench only. You can also secure the post with the DAA39-01.

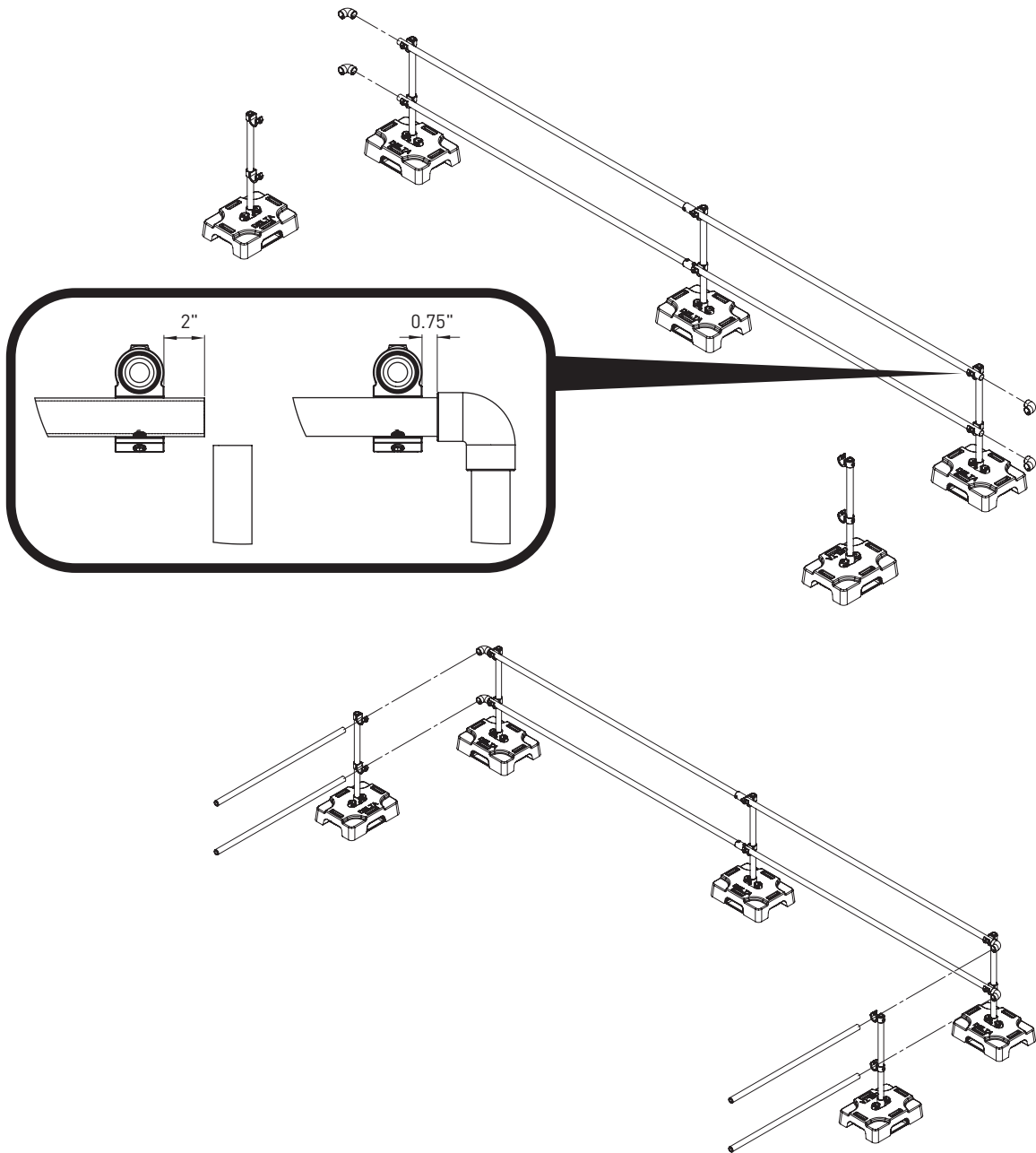


4

Insert the FAA06-01 pipes into the upper and lower GA201-01 to create the upper and intermediate rail. Cut the pipes to fit the guardrail at the installation site. Use the GA010-01 fitting to join two pipes.

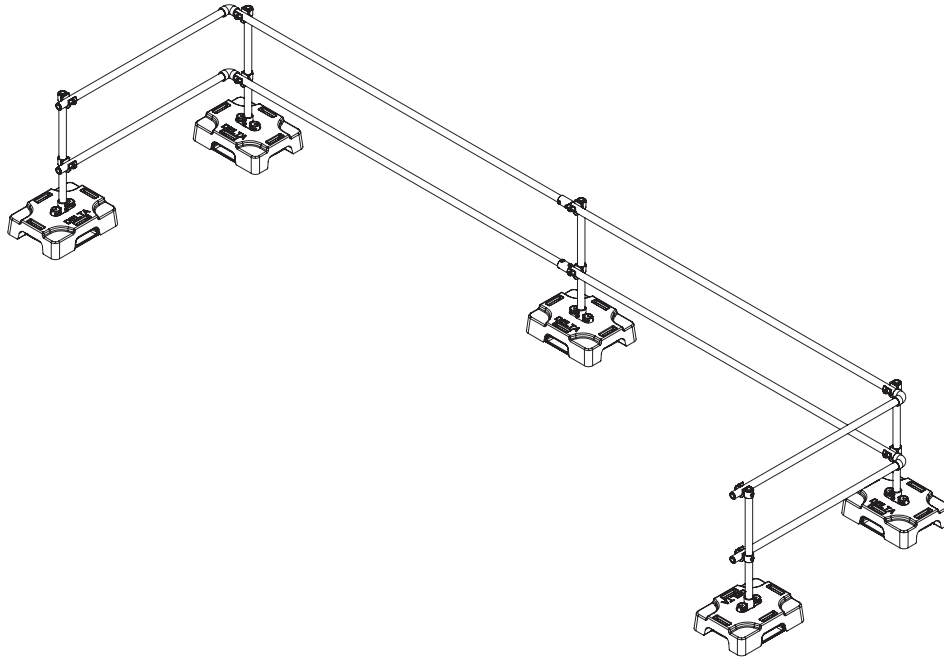
4.1

To create the 5' returns at each end, plan a 2" length in the upper and intermediate rail to accommodate the two GA090-01 then cut a FAA06-01 into two 5' sections. Tighten the set screws on each GA090-01 fitting to 30 lb/ft.



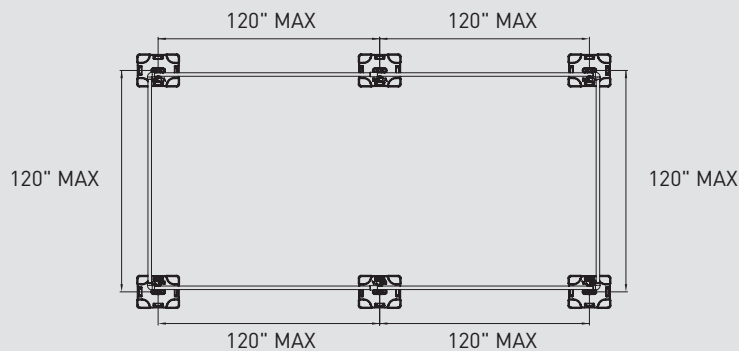
5

Tighten the set screws of all GA201-01 to 20 lb/ft to secure the top and bottom rails in place. Insert the BAA12-01 plastic caps at the four ends.



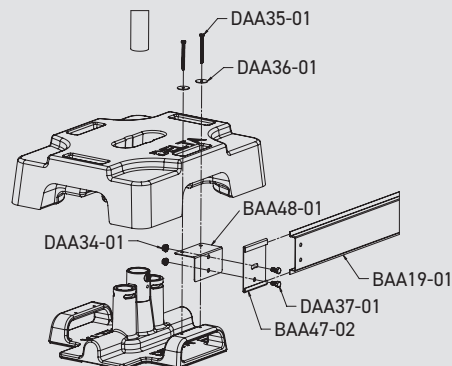
OPTIONAL – VSS Compact closed system

To create a closed system in VSS Compact, only CPA20002 positioned at maximum 10' (120") are needed. No returns are required.



OPTIONAL – Kick plate

When necessary, an optional kickplate is available on the VSS Compact



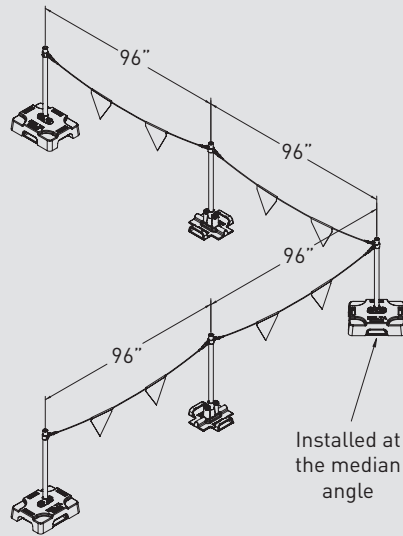
VSS SAFETYLINE



NOTICE

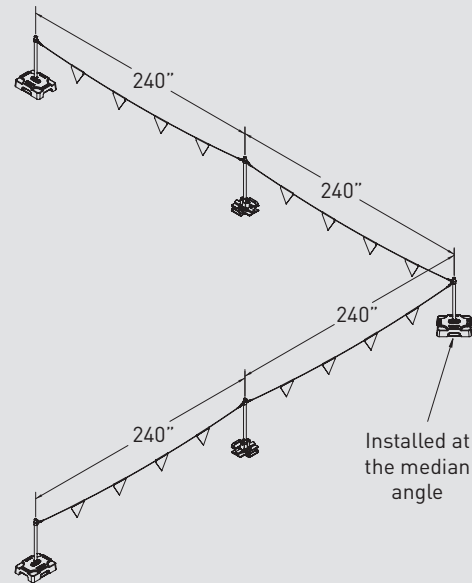
- The VSS Safetyline must ALWAYS be installed at more than 6'6" from the edge of the roof.

AVAILABLE CONFIGURATIONS



a) RSST compliant configuration (Quebec)

- Distance between posts: 96" maximum.
- Counterweights: One EAA05-01 per vertical post. An extra BAA13-01 must be added at each corner and unconnected end.
- Number of flags: 2 per 96" section.
- Maximum distance between flags: 48".
- Cable height: The center of the cable must be between 27.5" and 39" from the ground.



b) OSHA compliant configuration (Canada, USA)

- Distance between posts: 240" maximum.
- Counterweights: One EAA05-01 per vertical post. An extra BAA13-01 must be added at each corner and unconnected end.
- Number of flags: 4 per 240" section.
- Maximum distance between flags: 72".
- Cable height: The centre of the cable must be between 34" and 39" from the ground.

**NOTES - RSST STANDARD**

- According to Section 33.5 of RSST, a warning line in compliance to 354.1 may be installed to replace the use of a guardrail and delimit a work area on a roof with a slope equal to or less than 15 deg or 3/12 slope, however another fall protection mechanism such as a safety harness secured to an anchorage system by a fall arrest connecting device in accordance with section 347 be used outside the area delimited by the warning line.
- A warning line must be:
 1. Continuous and installed on all sides of the work area that it delimits
 2. Equipped with flags made of high visibility materials and placed at intervals of not more than 2m
 3. Completed at each access point, storage area or hoisting area by a path formed by 2 parallel lines not exceeding 3m in length.
In places where the access path starts at a roof edge, a guardrail must be placed on the side of the roof, in compliance of section 33.3 RSST, so as to cover the first 3m on either side of the access paths starting point

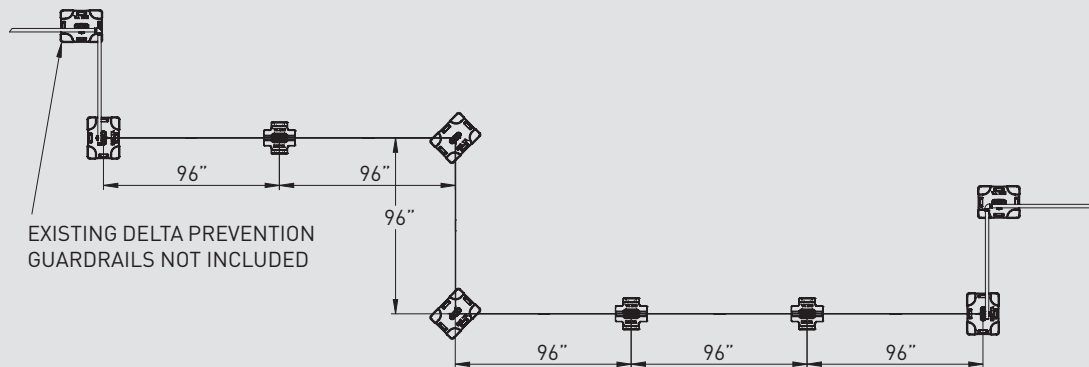
**NOTES - OSHA STANDARD**

- When mechanical equipment is being used, the warning line shall be erected not less than 6 feet (1.8 m) from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet (3.1 m) from the roof edge which is perpendicular to the direction of mechanical equipment operation.
- Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.
- When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.
- No employee shall be allowed in the area between a roof edge and a warning line unless the employee is performing roofing work in that area.
- Mechanical equipment on roofs shall be used or stored only in areas where employees are protected by a warning line system, guardrail system, or personal fall arrest system.

TYPES OF CONNECTION

TYPE G

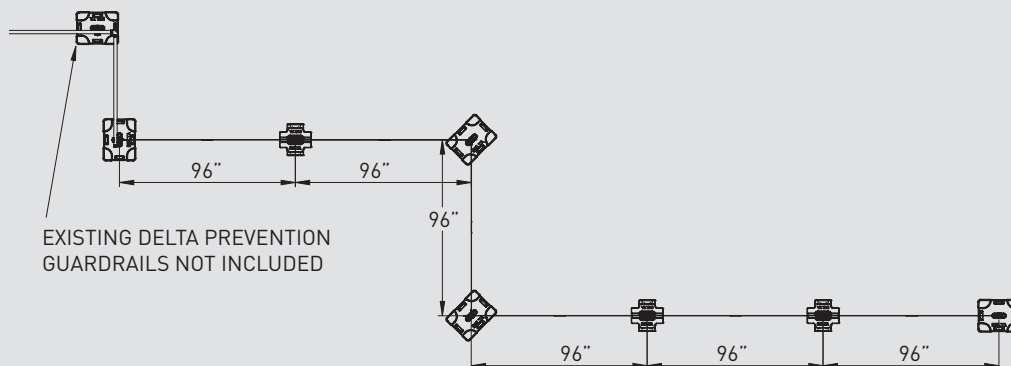
The warning line is connected to a guardrail or wall anchor at both ends. A rubber counterweight must be added at each corner and positioned at the median angle.



TYPE S

The warning line is connected to a guardrail or wall anchor at one end only. A rubber counterweight must be added at:

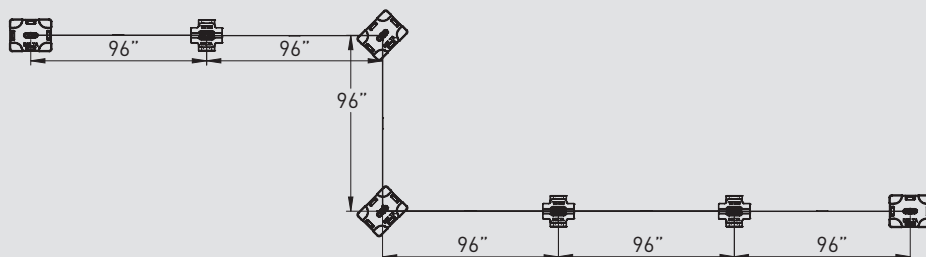
- the non-connected end.
- each corner and positioned at the median angle.



TYPE N

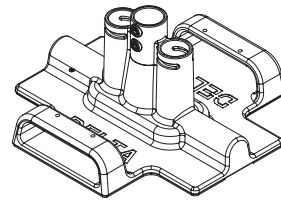
The warning line is not connected to any end. A rubber counterweight must be added at:

- both ends.
- each corner and positioned at the median angle.



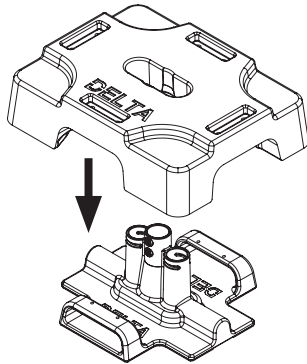
1

Position the EAA05-01 bases according to your type of configuration.



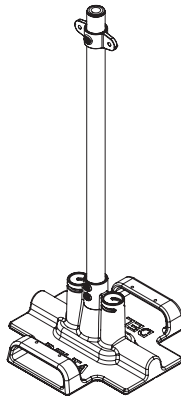
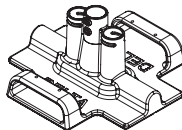
2

Add the BAA13-01 base on top of the EAA05-01 [only when required by your configuration].

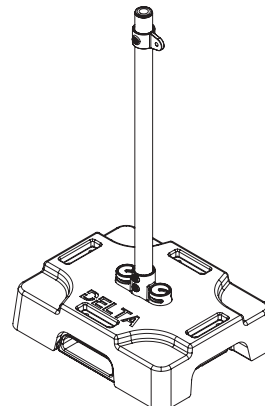


3

Insert the vertical post in the middle sleeve of the EAA05-01 and tighten the set screw to **15lbs/ft** using the torque wrench only.



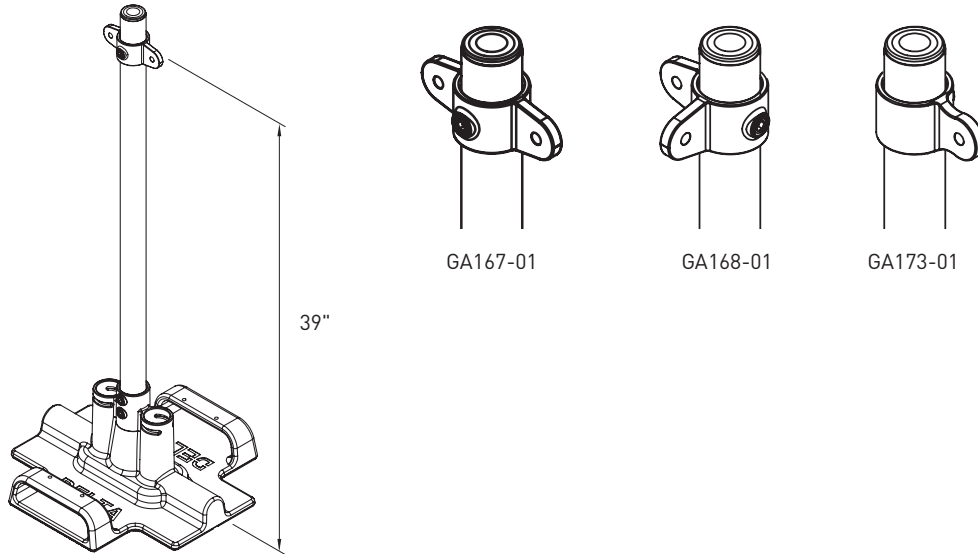
SPA10002



SPA20002

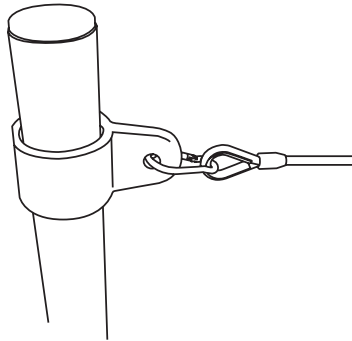
4

Install the fittings GA167-01 (center), GA168-01 (corner) and GA173-01 (end) on the vertical posts at 39" from the ground (measured above).



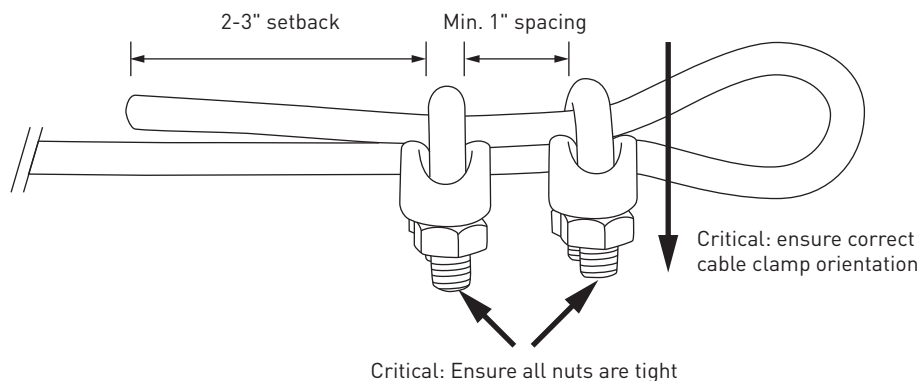
5

Install the BAA18-01 or BAA16-01 pre-assembled cables (96" or 240") between the SPA10002 and SPA20001 using carabiners. The distance between the middle of the cable and the ground should be adjusted according to your configuration. Install the BAA14-01 safety flags using the DAA26-01 plastic ties according to your configuration. Tighten the ties as much as possible then cut the extra. The flags should be centered on the sleeve preinstalled on the cables to prevent the flags from moving.



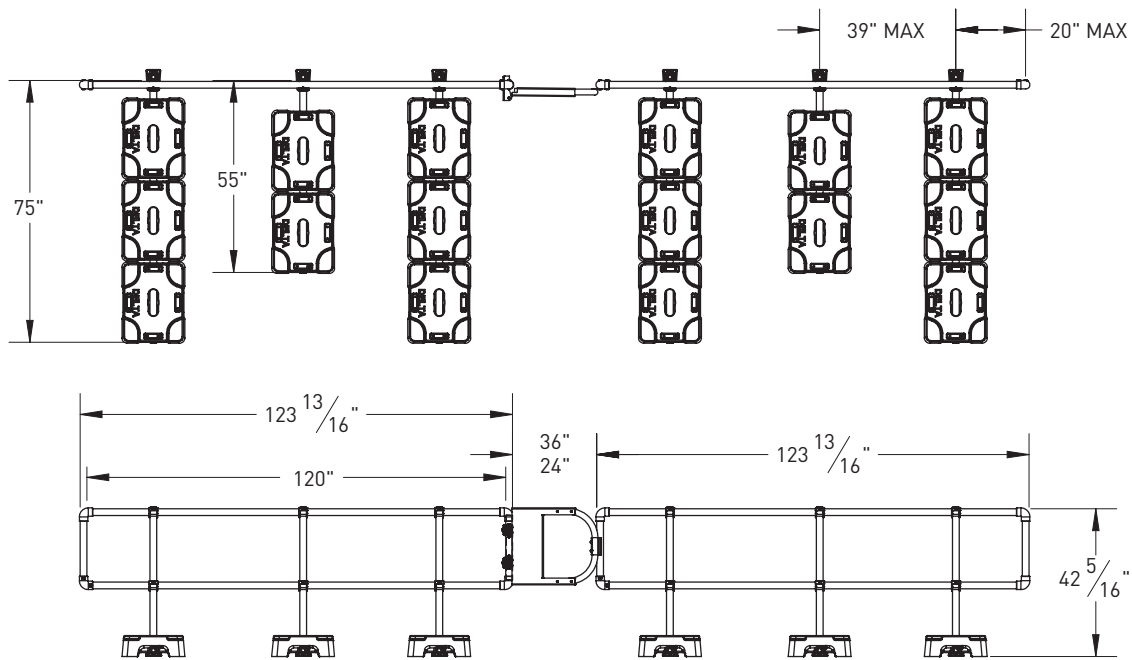
6

For distances that are less than the specified maximum of the standards, the installer must cut the warning line to length. For these specified lengths, the warning line must be finished with two DAA27-01 cable clamps as following:



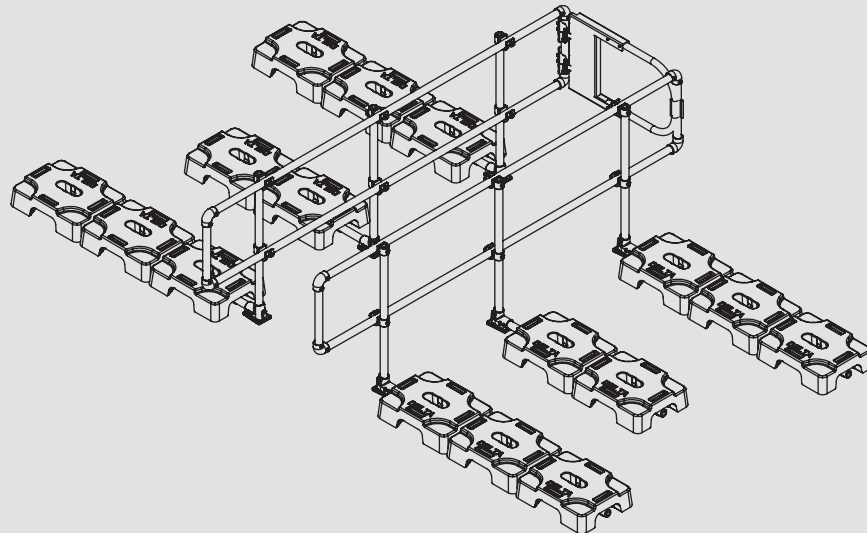
VSS CLASSIC GUARDRAILS FOR ACCESS LADDER

For the complete installation details, please refer to the section on VSS Classic



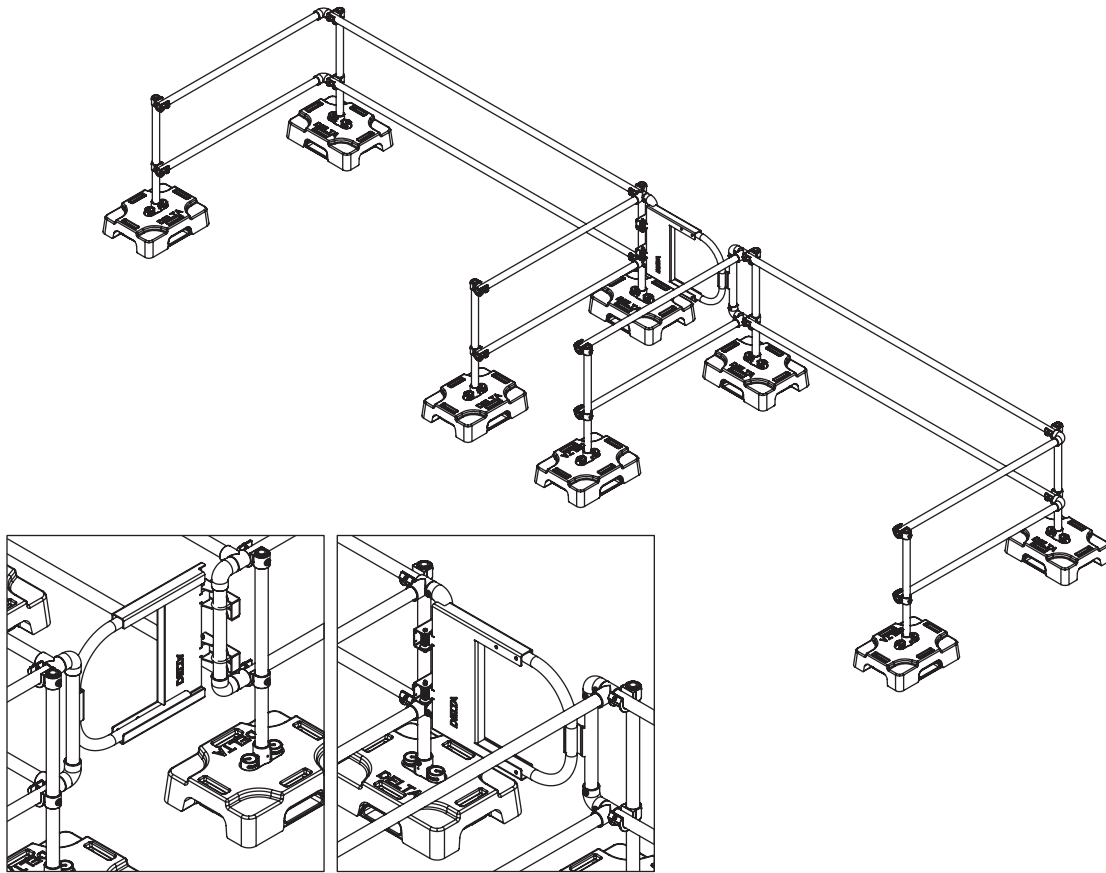
1. Position the GA200-01 bases 40" apart.
2. Assemble, position and then insert the DCS2 and DCS3 in their respective GA200-01 base.
3. Insert a VPS42 post into each GA200-01.
4. Insert the FAA06-01 pipes into the upper and lower GA201-01 to create the railing.
5. Create a 20" maximum "D-shaped" return at each end of the guardrail.
6. Installation of the GAT24A self-closing safety door: Leave a space of minimum 24" and maximum 36" between the guardrail sections.

ALTERNATIVE INSTALLATION:



VSS COMPACT GUARDRAILS FOR ACCESS LADDER

For the complete installation details, please refer to the section on VSS Compact



1. Position two EAA05-01 bases 112" apart then two others at 5' (60 ") away of these towards the inside of the roof to create the returns.
2. Insert the BAA13-01 rubber bases on the EAA05-01 bases.
3. Insert the vertical post in the EAA05-01 sleeve and tighten the set screw to **15lbs/ft** using the torque wrench only.
4. Insert the FAA06-01 pipes into the upper and lower GA201-01 to create the top and mid rails. Let the pipe extend 4" past the inside post and 2" past the outside post. This will leave space to connect the 5' returns and create the D "return" where the safety gate will be connected.
5. External return: use two GA090-01 fittings and 5' (60") pipes.
6. Internal return: insert two GA101-01 fittings and then insert two 5'(60") sections of pipe.
7. At the end of the inside length, create a "D" return with two GA090-01 fittings and one FAA07-01 pipe.
8. Installation of the GAT24A self-closing safety door: Leave a space of minimum 24" and maximum 36" between the guardrail sections.