



Installation Guide For:
ALUMINUM RAILING



Call 1-800-335-5909 for Installation Support

**This Packet MUST Accompany
Materials To Job Site**

Extra Screws Included



TABLE OF CONTENTS

POSTS.....	1
PANELS & BRACKETS	5
EVOLVE INTERNAL	6
EVOLVE EXTERNAL.....	12
EVOLVE STAIR.....	18
P2 AND JOINT COVERS.....	23
GATES	31
SECONDARY HANDRAIL	33

AI¹³

ALUMINUM RAILING SIMPLIFIED

POSTS



It is the responsibility of the installer to meet all code and safety requirements, and to obtain all required building permits. The deck and railing installer should determine and implement appropriate installation techniques for each installation situation. The Fortress Company or its distributors shall not be held liable for improper or unsafe installations.

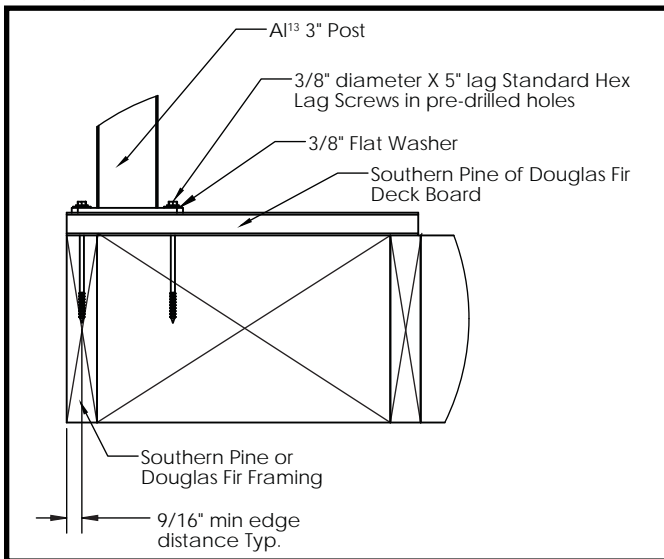
Fortress Al¹³ Posts must always be secured to the deck framing. Fortress Al¹³ Posts should never be attached to only the deck boards.

Note

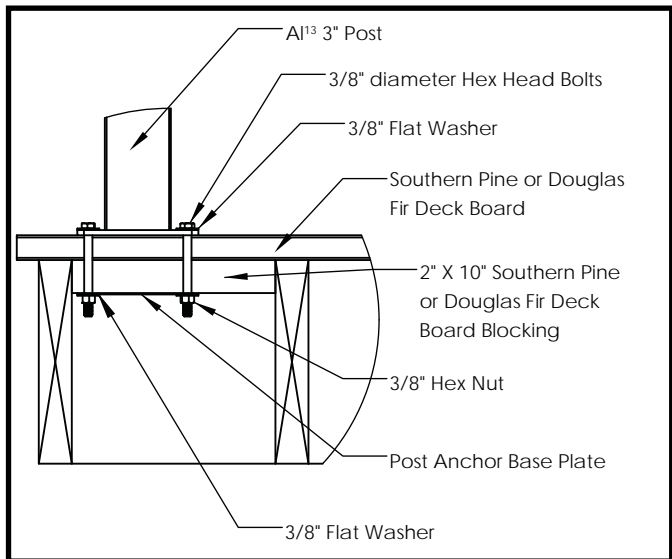
When cutting Fortress railing, it is very important to complete the following at cut points. Not following the below steps will result in rust at the cut areas:

- Remove all metal shavings from the cut area
- File any sharp edges left by cutting. Thoroughly wipe and remove any filings, grime or dirt from the railing.
- Apply two coats of Fortress zinc based touch-up paint to the cut area. Allow paint to dry.
- Be sure to remove any metal shavings from the surface of deck, patio or balcony to prevent rust on the surface.

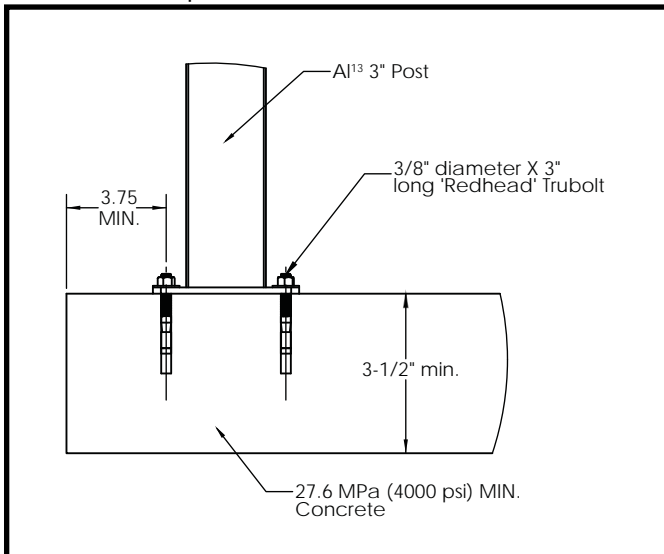
Al¹³ 3 Inch Post Top Mount To Southern Yellow Pine or Douglas Fir Floor Joist Mounted Parallel



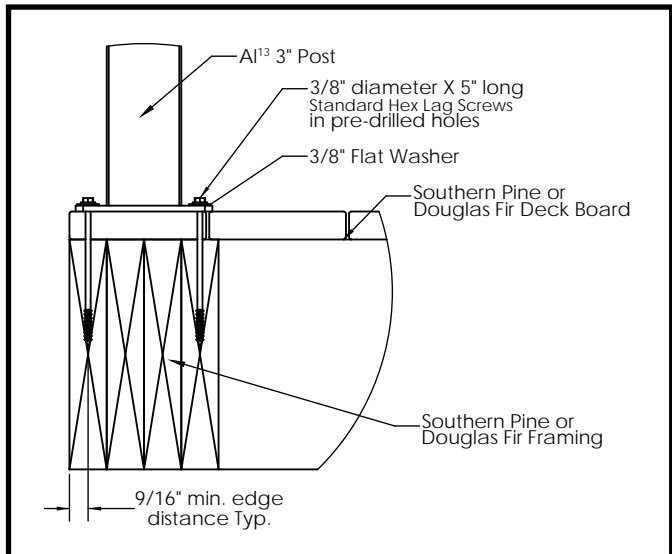
Al¹³ 3 Inch Post with through bolt & base plate on bottom



Al¹³ 3 Inch Post Top Mount To Concrete



Al¹³ 3 Inch Post Top Mount To Southern Pine or Douglas Fir Floor Joist Mounted Perpendicular



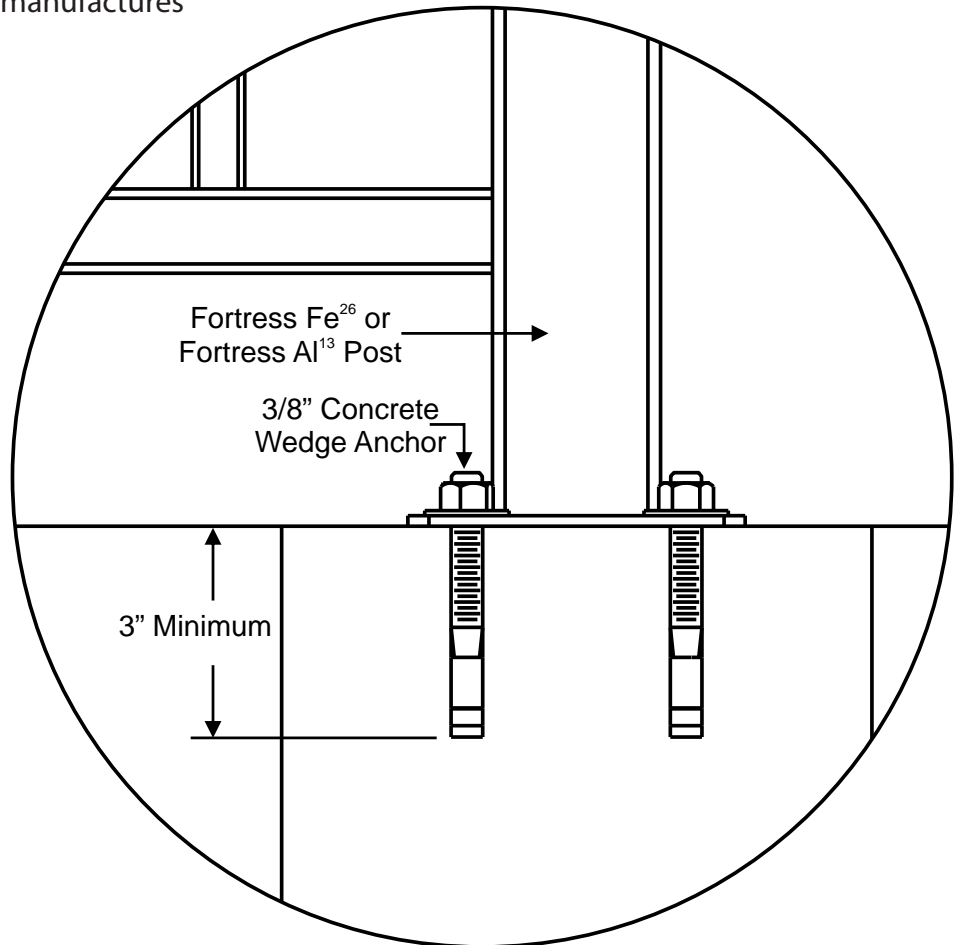
It is the responsibility of the installer to meet all code and safety requirements, and to obtain all required building permits. The deck and railing installer should determine and implement appropriate installation techniques for each installation situation. The Fortress Company or its distributors shall not be held liable for improper or unsafe installations.

Note

When cutting Fortress Fe²⁶ or Al¹³ Posts, it is very important to complete the following at cut points. Not following the below steps will result in rust at the cut areas:

- Remove all metal shavings from the cut area
- File any sharp edges left by cutting. Thoroughly wipe and remove any filings, grime or dirt from the railing.
- For Fe²⁶ Posts Apply two coats of Fortress zinc based touch-up paint to the cut area. If touch up is at rail ends, allow paint to dry before connecting bracket to post.
- Be sure to remove any metal shavings from the surface of deck, patio or balcony to prevent stains on the surface.

Secure Fortress Fe²⁶ or Al¹³ Posts to concrete deck surfaces with 3/8" Concrete Wedge Anchors. Follow Concrete Wedge Anchor manufactures installation instructions.



AI¹³

ALUMINUM RAILING SIMPLIFIED

PANELS & BRACKETS



It is the responsibility of the installer to meet all code and safety requirements, and to obtain all required building permits. The deck and railing installer should determine and implement appropriate installation techniques for each installation situation. The Fortress Company or its distributors shall not be held liable for improper or unsafe installations.

Fortress AI¹³ Posts must always be secured to the deck framing. Fortress AI¹³ Posts should never be attached to only the deck boards.

Read Instructions Completely Before Starting Installation

Note

When cutting Fortress railing, it is very important to complete the following at cut points.

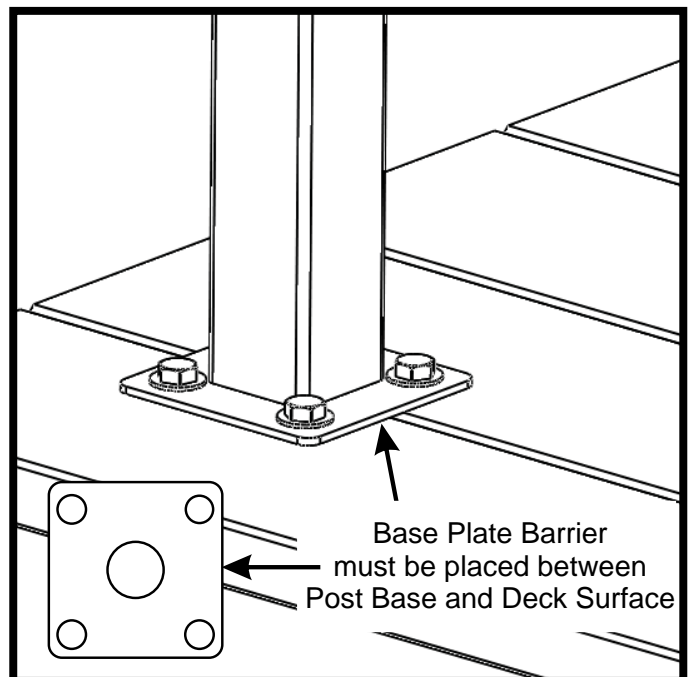
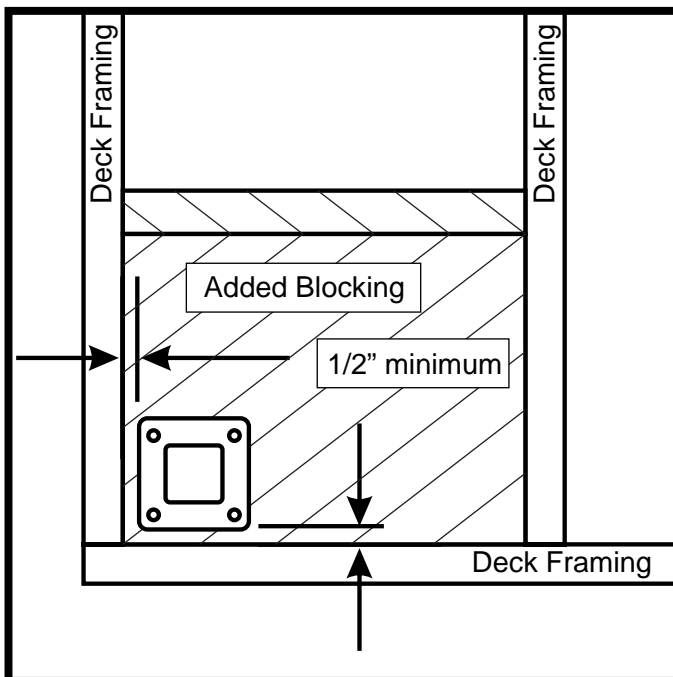
- Remove all metal shavings from the cut area
- File any sharp edges left by cutting. Thoroughly wipe and remove any filings, grime or dirt from the railing.
- Be sure to remove any metal shavings from the surface of deck, patio or balcony to prevent stains on the deck surface.

Required Materials

Miter saw with fine tooth blade, Drill, 1/16" and 3/16" Drill Bits, T-25 Driver Bit, Phillip's Head Screwdriver, Drill Bit Extender, Tape Measure, Wrenches, Speed Square, Center Punch, 3-1/2" Support Blocks and Hammer.

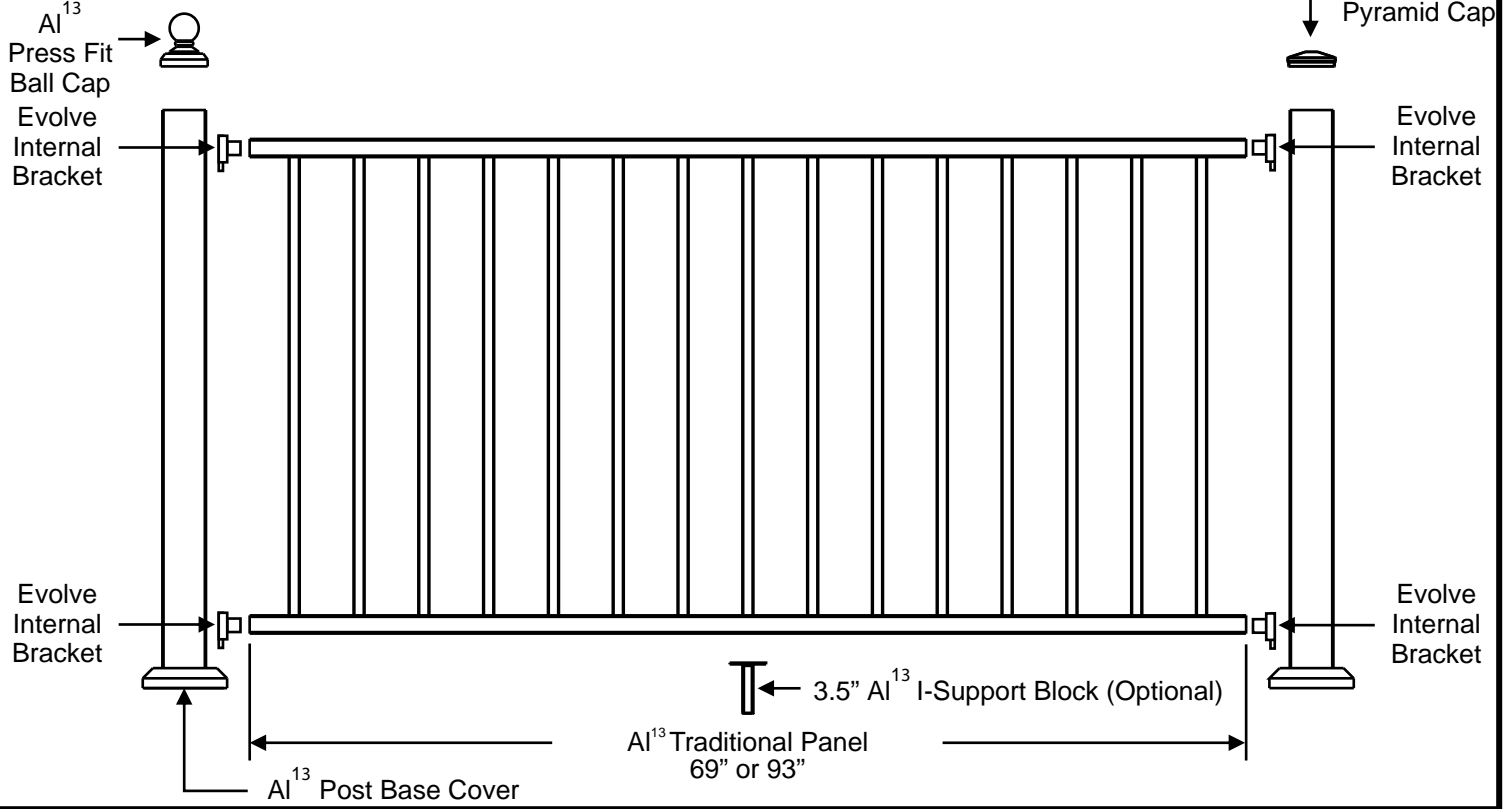
Mount AI¹³ Posts*

- Wood Blocking tied to deck frame must be installed and constructed with treated dimensional lumber with a minimum thickness of 1-1/2".
- AI¹³ 3" Post Spacing must not exceed 96" for 8' Panels and 72" for 6' Panels.
- Position the edge of post base plate a minimum of 1/2" from the inside edge of rim joist.
- Place included Base Plate Barrier between post base and deck surface.
- Mount posts at appropriate points based on panel length.
- Attach AI¹³ posts with 3/8 X 3-1/2" Hex Head galvanized bolts.

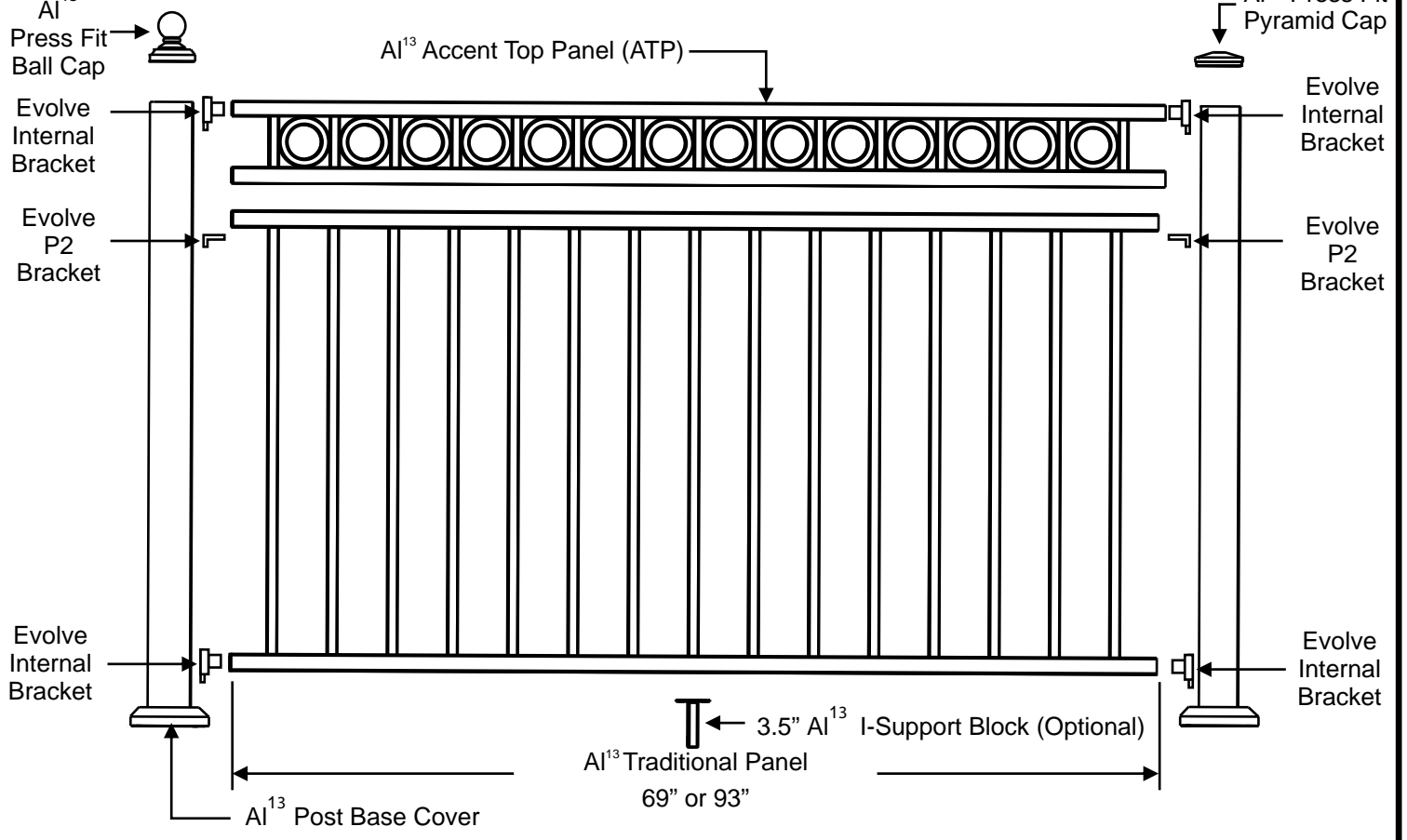


*Reference Fortress AI¹³ Post mounting instructions

Al¹³ Traditional Panel Installation Options



Al¹³ Traditional Panel with Al¹³ Accent Top Panel Installation Options



AI¹³ Traditional Panel and Post Configurations

Traditional Panel Height

34"
40"

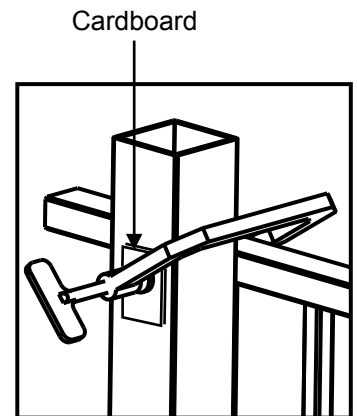
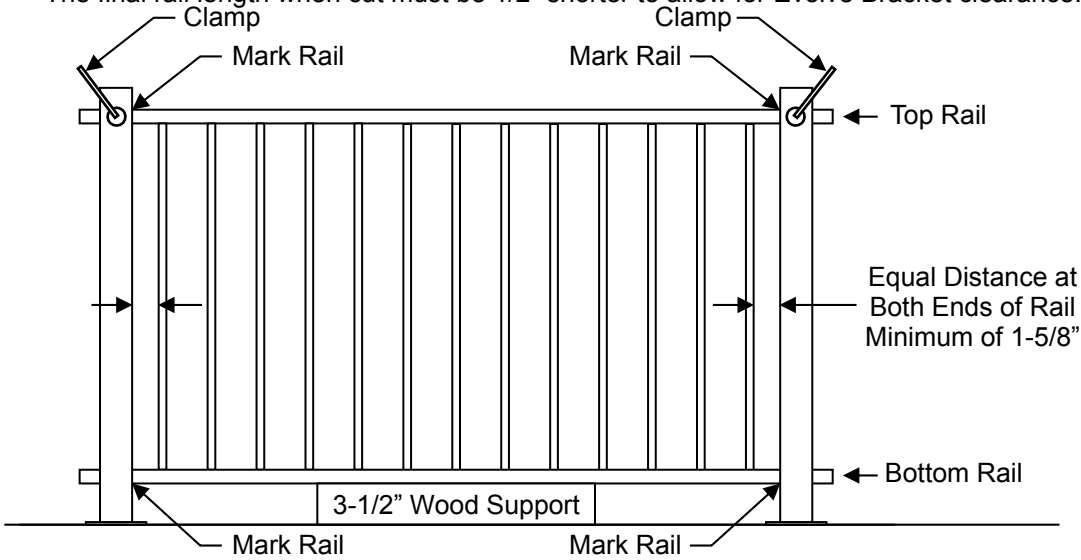
Traditional Panel without AI ¹³ Accent Top Panel	
Installed Panel Height*	Required Post
37-1/2"	39-1/2"
43-1/2"	45-1/2"

Traditional Panel with AI ¹³ Accent Top Panel	
Installed Panel Height with ATP*	Required Post
42-1/2"	45-1/2"
X	X

*Installed heights includes a 3-1/2" space between deck surface and bottom edge of bottom rail.

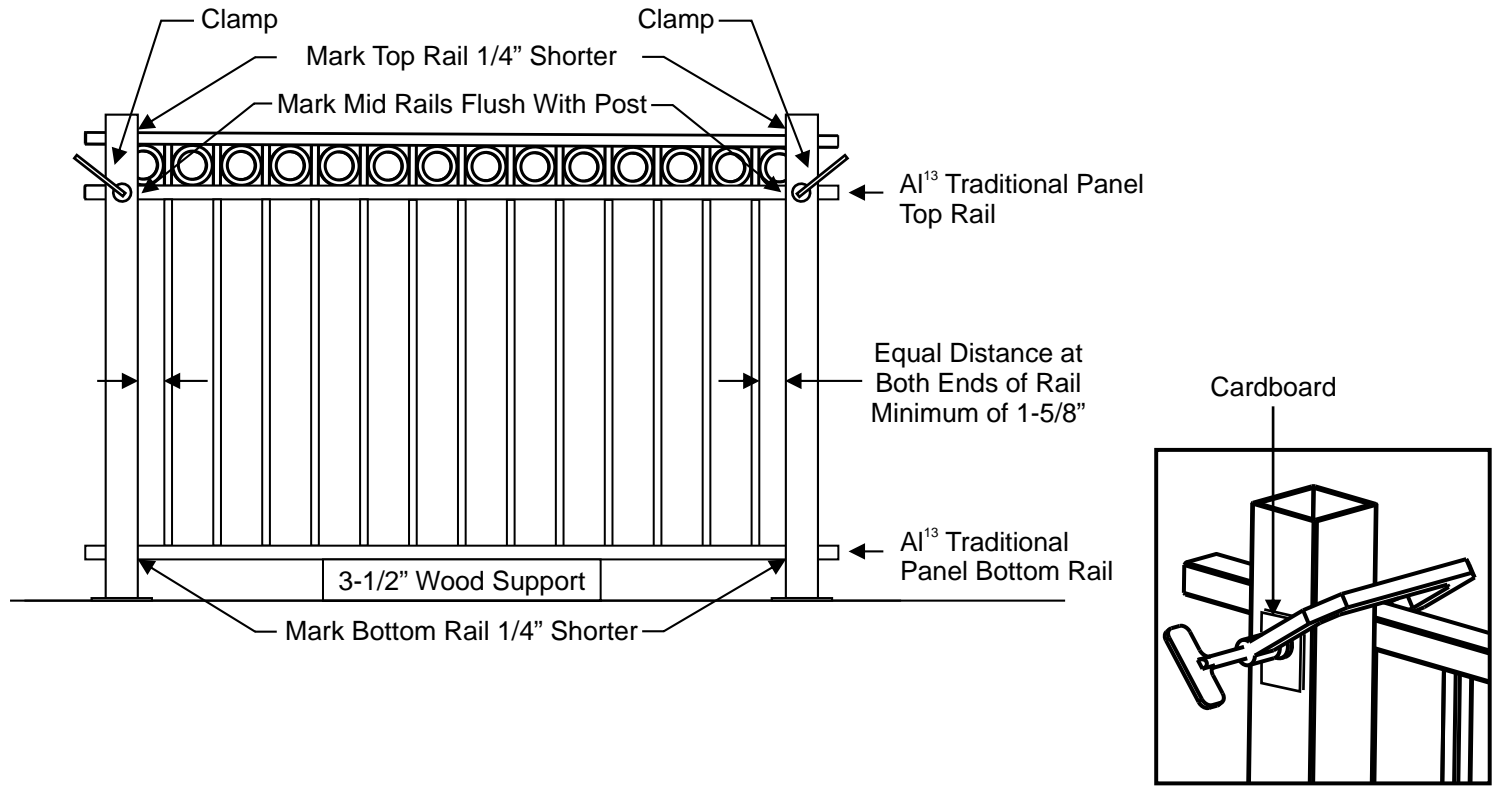
AI¹³ Traditional Panel Installation (Without AI¹³ Accent Top Panel) with Evolve Internal Bracket

- If installing AI¹³ Traditional Panel with an AI¹³ Accent Top Panel (ATP), disregard this box and proceed to next installation step.
- Check AI¹³ Posts to ensure that all AI¹³ Posts are square and straight. Shim AI¹³ Posts as required.
- Support AI¹³ Traditional Panel on 3-1/2" support blocks.
- Center AI¹³ Traditional Panel between the AI¹³ Posts so that there is an equal distance between the last baluster and AI¹³ Posts at each end.
- Minimum distance between the last baluster and post is 1"
- Clamp Rail to Post at each end to prevent movement. Place a piece of cardboard between clamp and AI¹³ Post & Panel
- Mark the rails 1/4" from the edge of the posts.
- The final rail length when cut must be 1/2" shorter to allow for Evolve Bracket clearance.



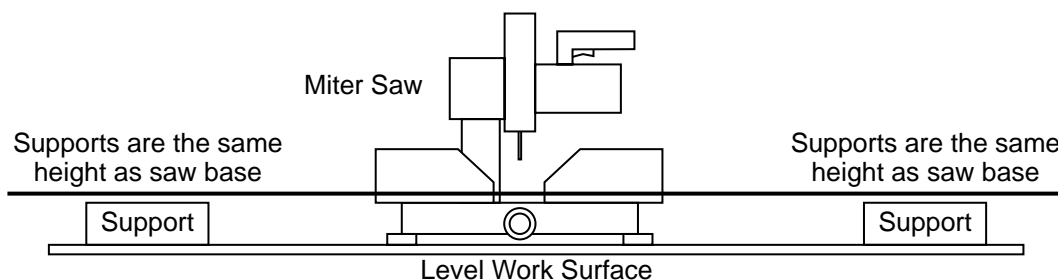
Al¹³ Traditional Panel Installation with Evolve Internal & Evolve P2 Brackets (With Al¹³ Accent Top Panel)

- Check posts to ensure that all posts are square and straight. Shim posts as required.
- Support Al¹³ Traditional Panel on 3-1/2" support blocks.
- Center Al¹³ Traditional Panel between the post so that there is an equal distance between the last baluster and post at each end.
- Minimum distance between the last baluster and post is 1-5/8"
- Clamp Rail to Post at each end to prevent movement. Place a piece of cardboard between clamp and Al¹³ Post & Panel.
- Mark the bottom rail of the Al¹³ Traditional Panel and the top rail of the Al¹³ Accent Top Panel, 1/4" from the edge of the posts.
- The final rail length when cut must be 1/2" shorter to allow for Evolve Internal Bracket clearance.
- The mid rail must be cut flush to the post.



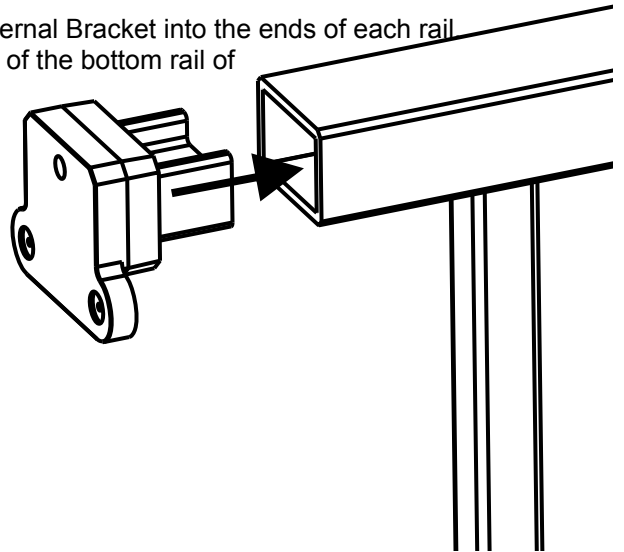
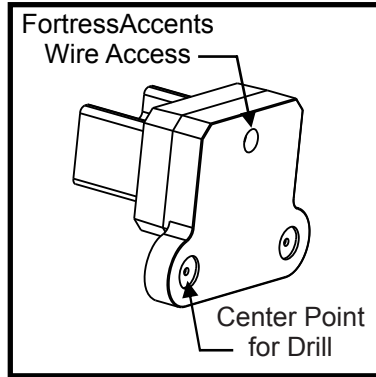
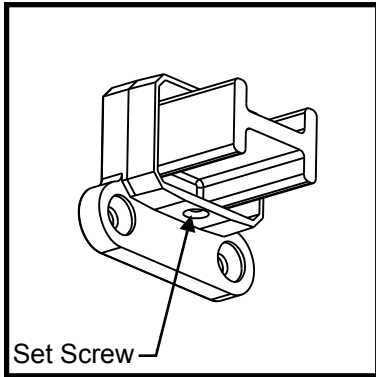
Cutting Al¹³ Traditional Panels

- The best way to cut Al¹³ Traditional Panels is to use a miter saw.
- A fine tooth carbide tipped blade designed to cut non-ferrous materials is recommended.
- Set up a work surface that is level and large enough to support all four corners of the Al¹³ Traditional Panel.
- Supports should be the same height as saw base to keep Al¹³ Traditional Panel straight and level when cutting.
- With Panels completely supported, make cuts at the marked locations from previous step.
- Remove any burrs or shavings from cut edges.
- Check the fit of Al¹³ Traditional Panel between post. Be careful not to scratch post with end cuts.



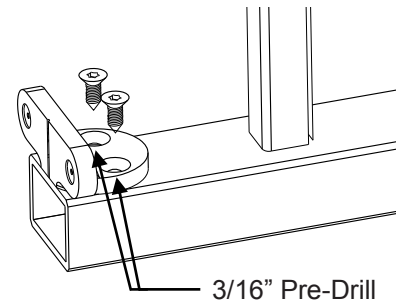
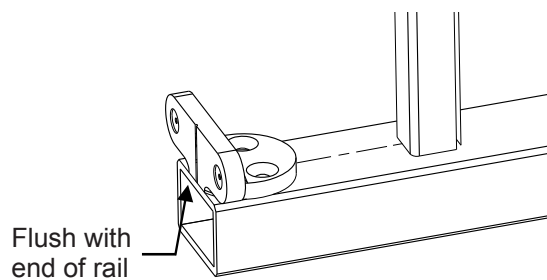
Install AI¹² Evolve Internal Brackets into Rail

- If not using an AI¹³ Accent Top Panel (ATP), insert an AI¹³ Evolve Internal Bracket into the ends of each rail
- If using an ATP, insert an AI¹³ Evolve Internal Bracket into the ends of the bottom rail of the AI¹³ Traditional Panel and the top rail of the ATP.
- Do not install set screw at this time.



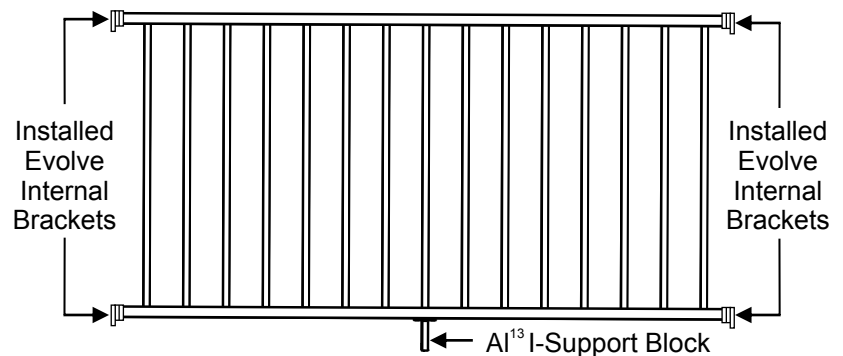
Install AI¹² Evolve P2 Brackets onto Top Rail (with AI¹³ Accent Top Panel)

- If not using an AI¹³ Accent Top Panel, disregard this box and proceed to the next step
- Align flat back of Evolve P2 Bracket flush with the end of the top rail of the AI¹³ Traditional Panel.
- Center the circular portion of the Evolve P2 Bracket on the rail.
- Mark the center points of the holes with a pencil. Use a center punch to mark the hole locations.
- Pre-drill screw locations with a 3/16" drill bit.
- Secure Evolve P2 Bracket to AI¹³ Traditional Panel with supplied T-25 thread cutting screws.
- Repeat for the other side of the rail.



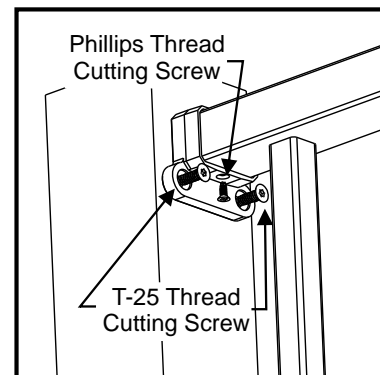
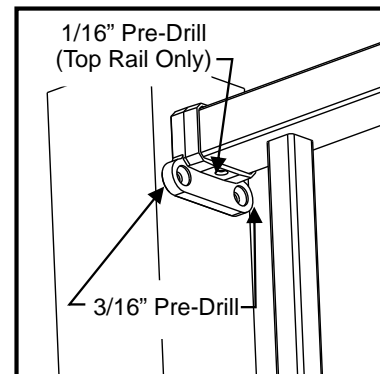
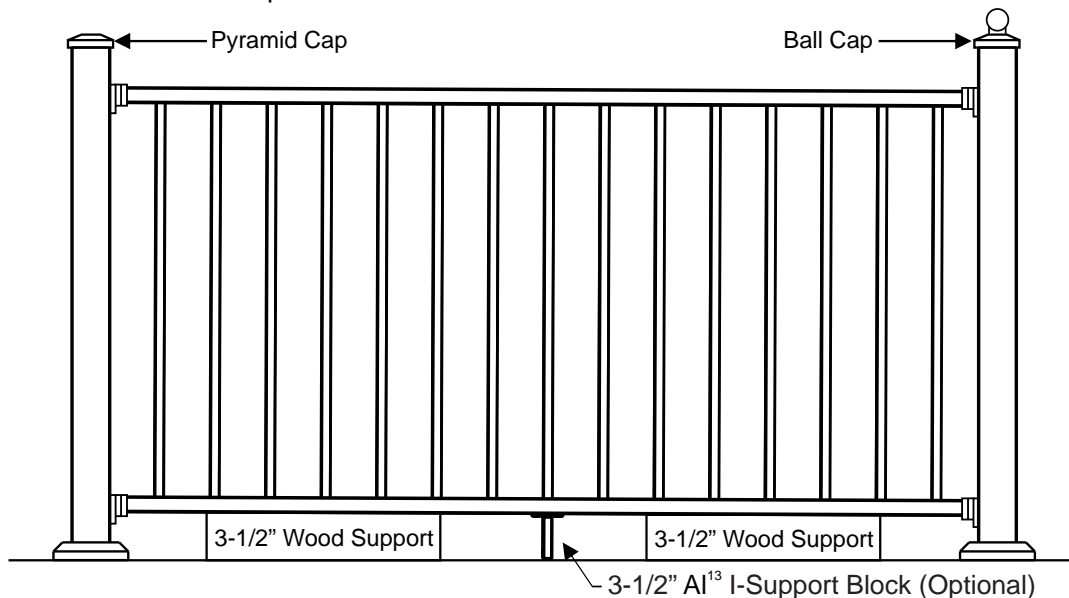
AI¹³ Support Block Installation

- AI¹³ Support Block is recommended for rail spans over 72"
- Mark the center of AI¹³ Traditional Panel Bottom Rail.
- Position AI¹³ Support Block and mark hole locations.
- Pre-drill with a 3/16" Drill Bit
- Secure AI¹³ Support Block with supplied screws.



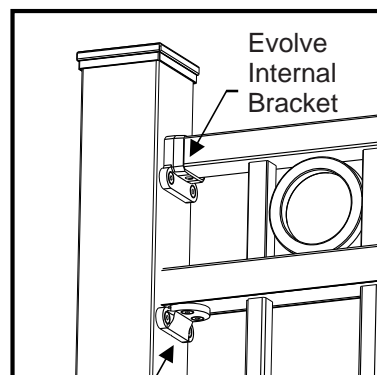
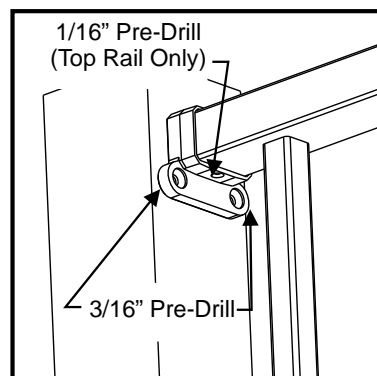
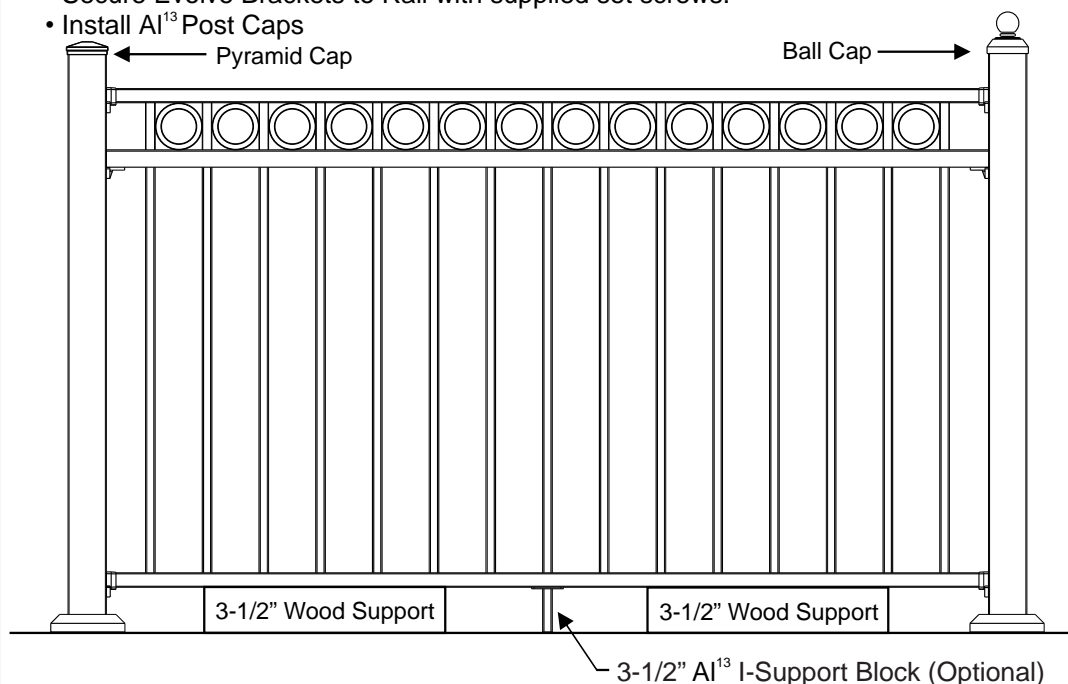
Installing Al¹³ Traditional Panels to Al¹³ Posts¹³ (Without Al¹³ Accent Top Panel)

- If using an Al¹³ Accent Top Panel, disregard this box and proceed to next installation step.
- Install Al¹³ Base Covers install them now by sliding over the top of Al¹³ Post.
- Place a 3-1/2" Support near each post.
- Place Al¹³ Traditional Panel with Evolve Brackets and Support Blocks positioned on rail.
- Center Al¹³ Traditional Panel on each Post.
- With Al¹³ Traditional Panel in position, pre-drill screw locations with a 3/16" drill bit.
- Secure Evolve Brackets to Al¹³ Post with supplied T-25 thread cutting screws.
- Pre-drill set screws holes in the 2 top rail Evolve Brackets with a 1/16" drill bit.
- Secure Evolve Internal Brackets to Rail with supplied set screws.
- Install Al¹³ Post Caps



Installing Al¹³ Traditional Panels to Al¹³ Posts¹³ (With Al¹³ Accent Top Panel)

- Install Al¹³ Base Covers now by sliding over the top of Al¹³ Post.
- Slide Al¹³ Accent Top Panel over the top rail of the Al¹³ Traditional Panel.
- Place a 3-1/2" Support near each post.
- Place Al¹³ Traditional Panel with Evolve Brackets and Support Blocks positioned on rail.
- Center Al¹³ Traditional Panel on each Al¹³ Post.
- With Panel in position, pre-drill screw locations with a 3/16" drill bit.
- Secure Evolve Brackets to Al¹³ Post with supplied T-25 thread cutting screws.
- Pre-drill 1/16" set screws holes in the 2 top rail Al¹³ Evolve Internal Brackets.
- Secure Evolve Brackets to Rail with supplied set screws.
- Install Al¹³ Post Caps



Evolve P2 Bracket

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Fortress Al¹³ Posts must always be secured to the deck framing. Fortress Al¹³ Posts should never be attached to only the deck boards.

Read Instructions Completely Before Starting Installation

Note

When cutting Fortress railing, it is very important to complete the following at cut points.

- Remove all metal shavings from the cut area
- File any sharp edges left by cutting. Thoroughly wipe and remove any filings, grime or dirt from the railing.
- Be sure to remove any metal shavings from the surface of deck, patio or balcony to prevent stains on the deck surface.

Torx Safety Tips

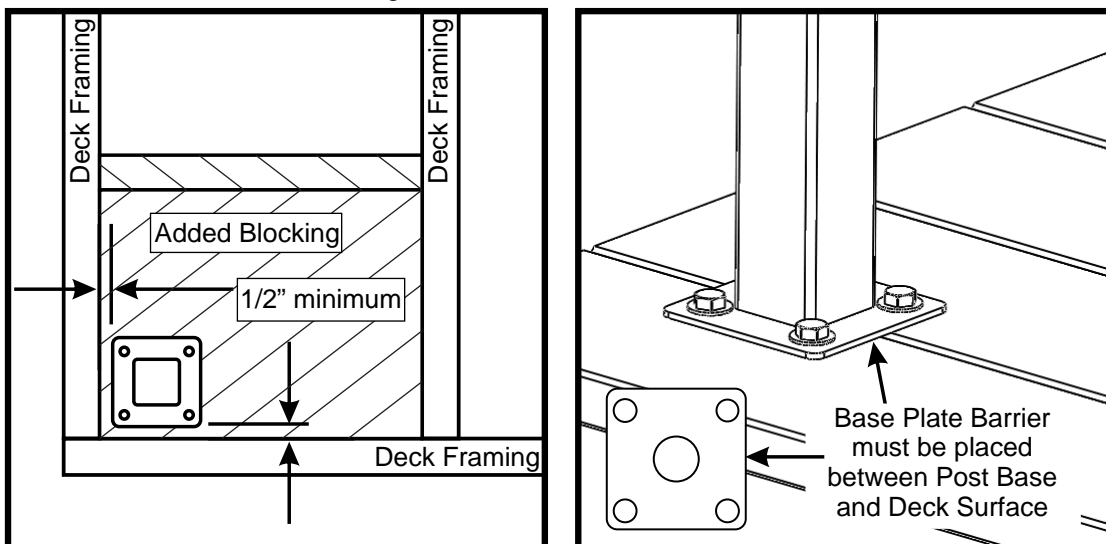
- Always pre-drill holes with a 3/16" drill bit.
- Always use the lowest speed setting on drill.
- To reduce chance of bit breakage, start tightening with drill on low torque setting and work up until screw is secured.

Required Materials

Miter saw with fine tooth blade, Drill, 1/16" and 3/16" Drill Bits, T-25 Driver Bit, Phillip's Head Screwdriver, Drill Bit Extender, Tape Measure, Wrenches, Speed Square, Center Punch, 3-1/2" Support Blocks and Hammer.

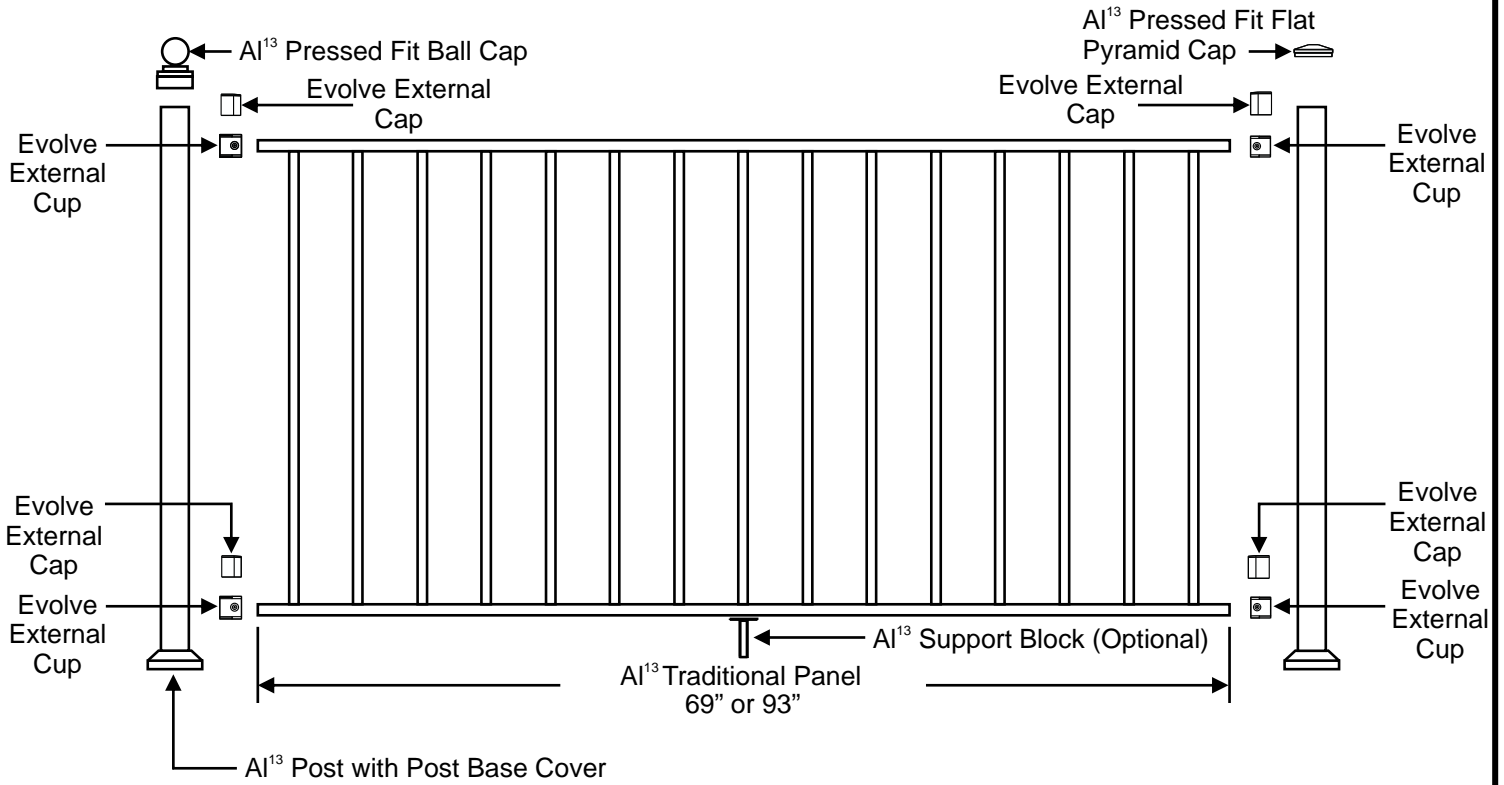
Mount Al¹³ Posts*

- Wood Blocking tied to deck frame must be installed and constructed with treated dimensional lumber with a minimum thickness of 1-1/2".
- Al¹³ Post Spacing must not exceed 96" for 8' Panels and 72" for 6' Panels.
- Position the edge of post base plate a minimum of 1/2" from the inside edge of rim joist.
- Place included Base Plate Barrier between post base and deck surface.
- Mount posts at appropriate points based on panel length.
- Attach Al¹³ posts with 3/8 X 3-1/2" Hex Head galvanized bolts.

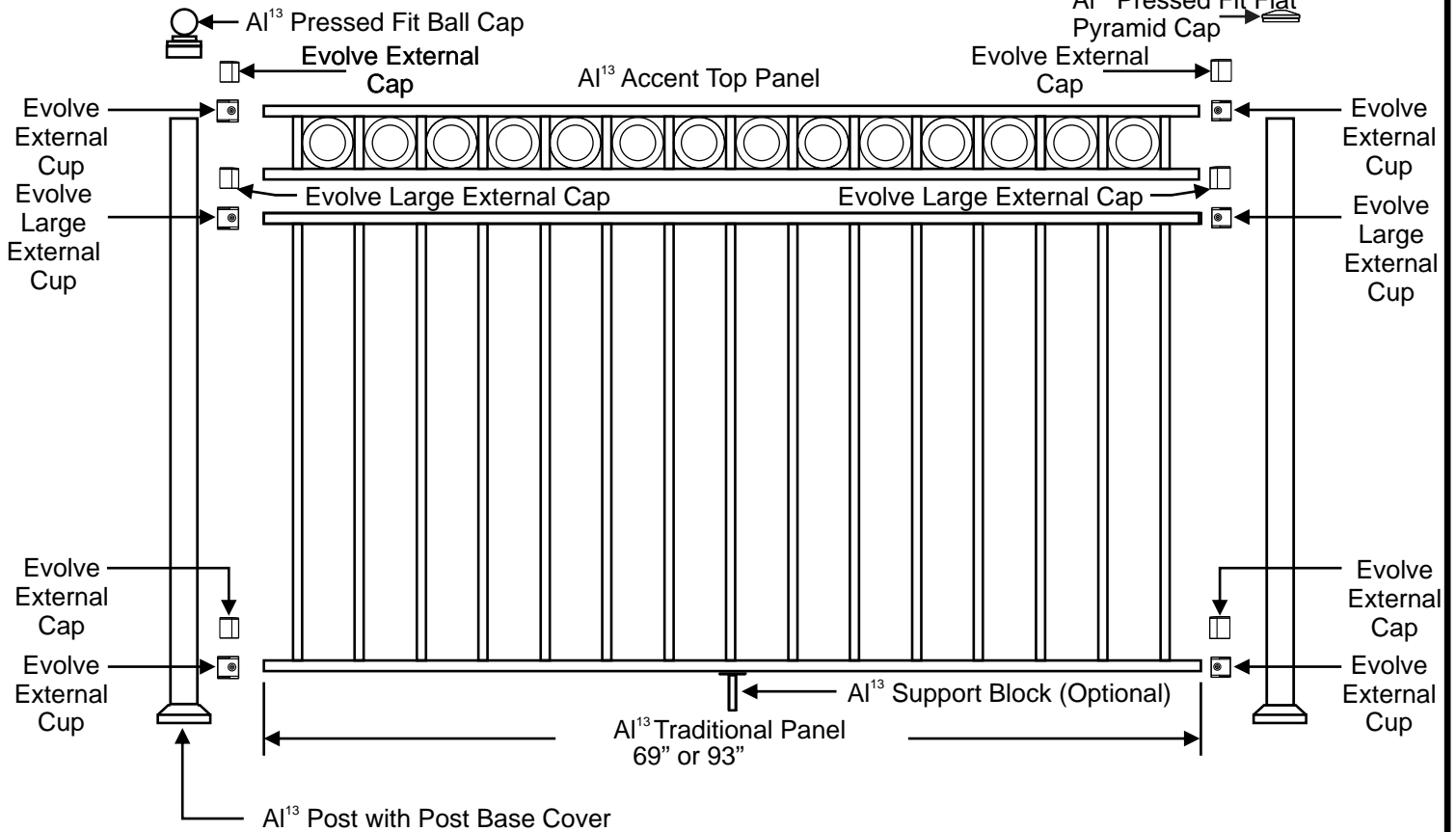


*Reference Fortress Al¹³ Post mounting instructions

Al¹³ Traditional Panel Installation Options

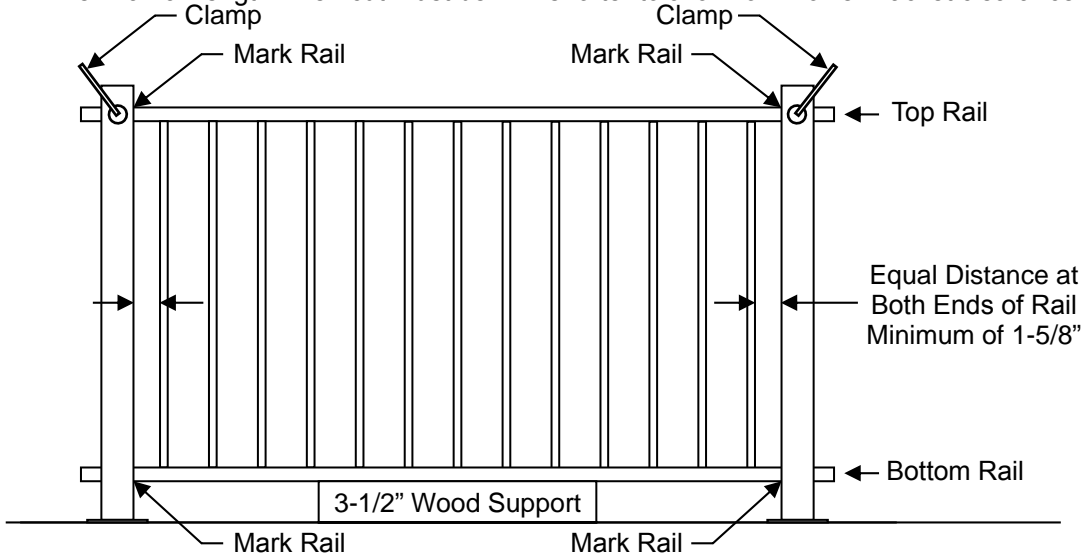


Al¹³ Traditional Panel with Al¹³ Accent Top Panel Installation Options



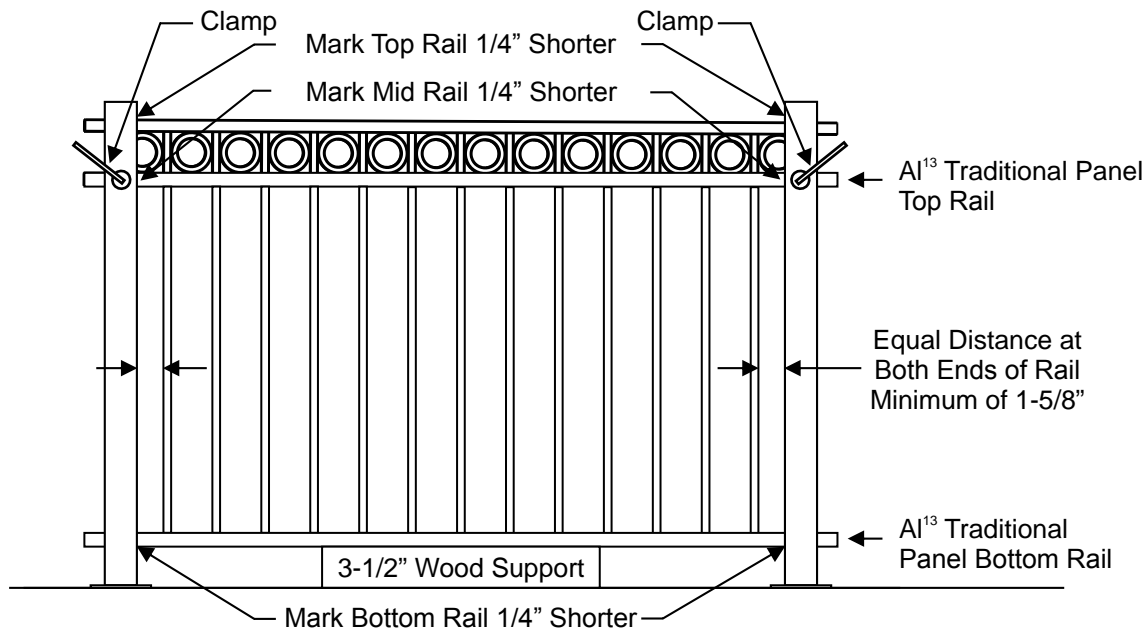
AI¹³ Traditional Panel Installation (Without AI¹³ Accent Top Panel) with Evolve External Bracket

- If installing AI¹³ Traditional Panel with an AI¹³ Accent Top Panel (ATP), disregard this box and proceed to next installation step.
- Check AI¹³ Posts to ensure that all AI¹³ Posts are square and straight. Shim AI¹³ Posts as required.
- Support AI¹³ Traditional Panel on 3-1/2" support blocks.
- Center AI¹³ Traditional Panel between the AI¹³ Posts so that there is an equal distance between the last baluster and AI¹³ Posts at each end.
- Minimum distance between the last baluster and post is 1-5/8"
- Clamp Rail to Post at each end to prevent movement. Place a piece of cardboard between clamp and AI¹³ Post & Panel
- Mark the rails 1/4" from the edge of the posts.
- The final rail length when cut must be 1/2" shorter to allow for Evolve Bracket clearance.



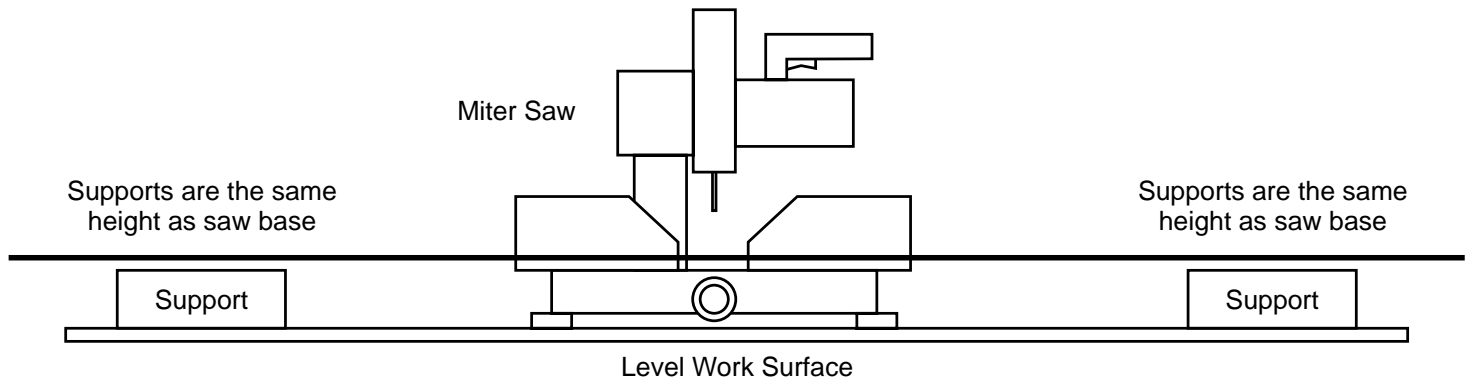
AI¹³ Traditional Panel Installation with Evolve External & Evolve External Large Brackets (With AI¹³ Accent Top Panel)

- Check posts to ensure that all posts are square and straight. Shim posts as required.
- Support AI¹³ Traditional Panel on 3-1/2" support blocks.
- Center AI¹³ Traditional Panel between the post so that there is an equal distance between the last baluster and post at each end.
- Minimum distance between the last baluster and post is 1-5/8"
- Maximum distance between the last baluster and post is 3-15/16"
- Clamp Rail to Post at each end to prevent movement. Place a piece of cardboard between clamp and AI¹³ Post & Panel.
- Mark the bottom rail of the AI¹³ Traditional Panel and the top rail of the AI¹³ Accent Top Panel, 1/4" from the edge of the posts.
- The final rail length when cut must be 1/2" shorter to allow for Evolve External Bracket clearance.



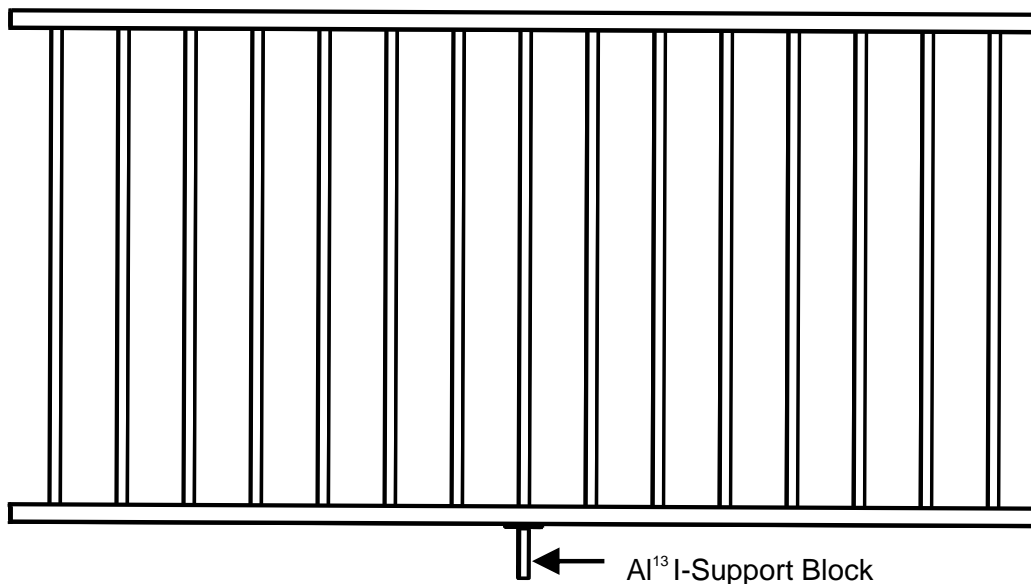
Cutting Al¹³ Traditional Panels

- The best way to cut Al¹³ Traditional Panels is to use a miter saw.
- A fine tooth carbide tipped blade designed to cut non-ferrous materials is recommended.
- Set up a work surface that is level and large enough to support all four corners of the Al¹³ Traditional Panel.
- Supports should be the same height as saw base to keep Al¹³ Traditional Panel straight and level when cutting.
- With Panels completely supported, make cuts at the marked locations from previous step.
- Remove any burrs or shavings from cut edges.
- Check the fit of Al¹³ Traditional Panel between post. Be careful not to scratch post with end cuts.



Al¹³ Support Block Installation

- Al¹³ Support Block is recommended for rail spans over 72"
- Mark the center of Al¹³ Traditional Panel Bottom Rail.
- Position Al¹³ Support Block and mark hole locations.
- Pre-drill with a 3/16" Drill Bit
- Secure Al¹³ Support Block with supplied screws.



Al¹³ Traditional Panel and

Al¹³ Post Configurations

Traditional Panel Height

34"

40"

Traditional Panel Only

Installed Panel Height*

37-1/2"

43-1/2"

Required Post

39-1/2"

45-1/2"

Traditional Panel with Al¹³ Accent Top Panel

Installed Panel Height with ATP*

42-1/2"

X

Required Post

45-1/2"

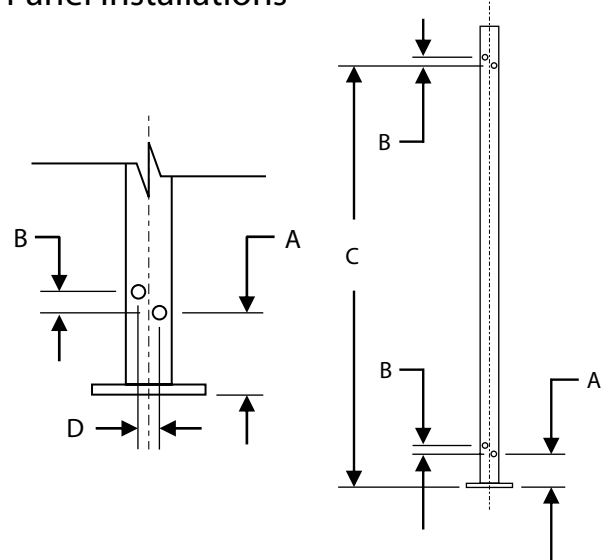
X

*Installed heights include a 3-1/2" space between deck surface and bottom edge of bottom rail.

Evolve External Bracket Hole Locations for Al¹³ Traditional Panel Installations

Pre-Drilling with a 3/16" drill bit is required.

Rail Panel Height	Pre-Drill Dimensions			
	A*	B	C	D
34"	3-13/16"	1/2"	36-11/16"	13/16"
40"	3-13/16"	1/2"	42-11/16"	13/16"



*Dimension A positions bottom edge of rail 3-1/2" above deck surface.

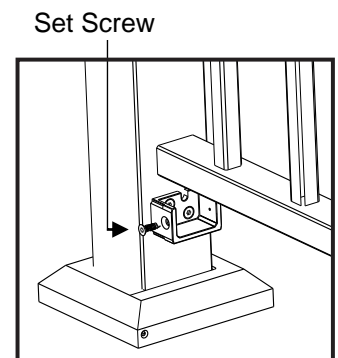
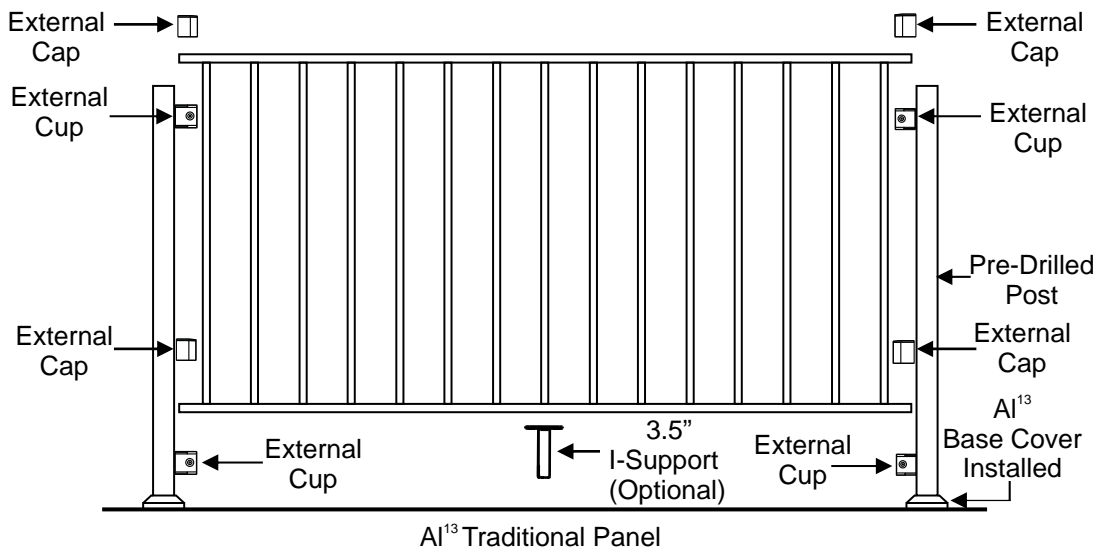
*Dimension A is measured from the bottom surface of post base.

Remove all metal shavings from deck, post base cover, post, and panel before bracket is screwed to post to prevent corrosion.

Al¹³ Traditional Panel Installation with Evolve External Brackets (Without Al¹³ Accent Top Panel)

When using Evolve External Brackets, rails MUST be cut 1/2" shorter than the distance between posts. 1/4" should be cut from the end of each rail to keep rail panel centered between posts.

- If rails were cut, file cut edges.
- Check fit of rail between installed Al¹³ Posts.
- Install Al¹³ Post Base Cover by sliding over the top of Al¹³ Post.
- Secure External brackets to Al¹³ Posts with provided T25 thread-cutting screws. Use two screws per bracket. Use low speed setting on drill.
- Drop Al¹³ Traditional Panel into installed External brackets.
- Secure rails with provided T25 thread-cutting screws at each External bracket.
- Install External Caps by sliding the cap over the External Cup. Cap will snap into place.



Evolve External Bracket Hole Locations for AI¹³ Traditional Panel and AI¹³ Accent Top Panel

AI¹³ Traditional Panel and AI¹³ Accent Top Panel

Pre-Drilling with a 3/16" drill bit is required.

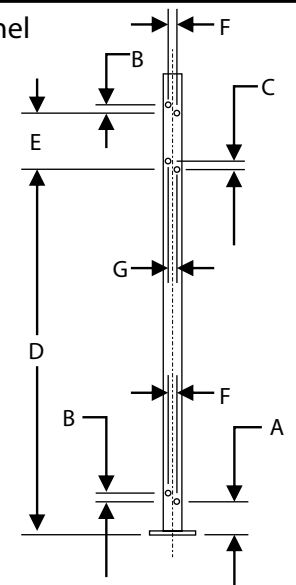
Traditional ATP Panel Height

34"	5"
40"	5"

		Pre-Drill Dimensions						
		A*	B	C	D	E	F	G
34"	5"	3-13/16"	1/2"	1/2"	36-11/16"	5-1/16"	13/16"	13/16"
40"	5"	X	X	X	X	X	X	X

*Dimension A positions bottom edge of rail 3-1/2" above deck surface.
 *Dimension A is measured from the bottom surface of post base.

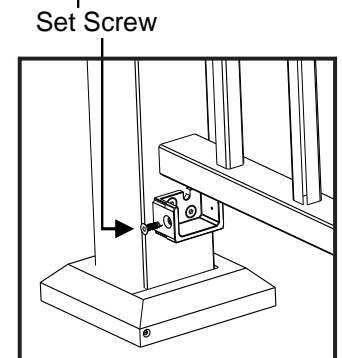
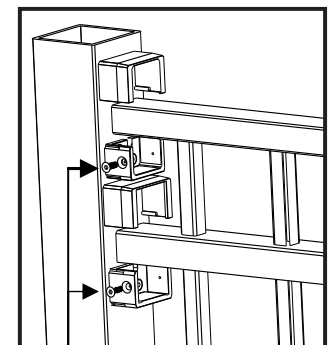
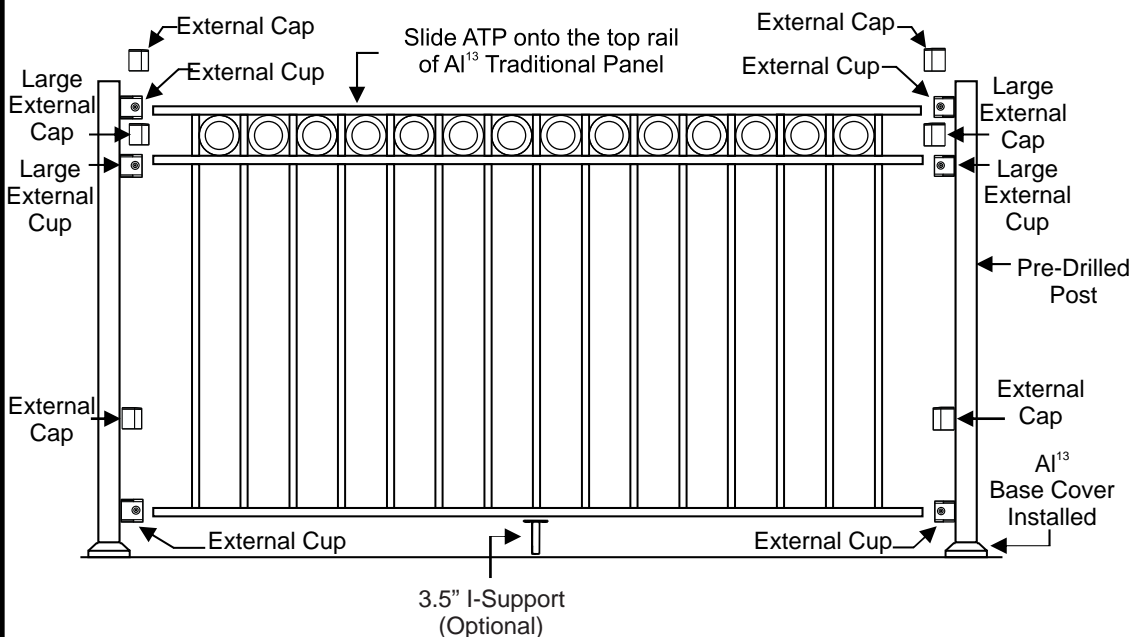
Remove all metal shavings from deck, post base cover, post, and panel before bracket is screwed to post to prevent corrosion.



AI¹³ Traditional Panel Installation with Evolve External and Evolve External Large Brackets (With AI¹³ Accent Top Panel)

When using Evolve External Brackets, rails MUST be cut 1/2" shorter than the distance between posts. 1/4" should be cut from the end of each rail to keep rail panel centered between posts.

- If rails were cut, file cut edges.
- Check fit of rail between installed AI¹³ Posts.
- Install AI¹³ Post Base Cover by sliding over the top of AI¹³ Post.
- Slide AI¹³ Accent Top Panel panel over the top rail of the AI¹³ Traditional Panel.
- Secure External brackets to AI¹³ Posts with provided T25 thread-cutting screws. Use two screws per bracket. Use low speed setting on drill.
- Drop AI¹³ Panel into installed External brackets.
- Secure rails with provided T25 thread-cutting screws at each External bracket.
- Install External Caps by sliding the cap over the External Cup. Cap will snap into place.



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Fortress AI¹³ Posts must always be secured to the deck framing. Fortress AI¹³ Posts should never be attached to only the deck boards.

Read Instructions Completely Before Starting Installation

Note

When cutting Fortress railing, it is very important to complete the following at cut points. Not following the below steps will result in corrosion at the cut areas:

- Remove all metal shavings from the cut area.
- File any sharp edges left by cutting. Thoroughly wipe and remove any filings, grime or dirt from the railing.
- Be sure to remove any metal shavings from the surface of deck, patio or balcony to prevent corrosion on the surface.

Required Materials

Miter saw with fine tooth blade, Drill, 1/16" and 3/16" Drill Bits, T-25 Torx Driver Bits, Phillip's Head Screwdrivers, Drill Bit Extender, Tape Measure, Wrenches, Speed Square, Center Punch, 3-1/2" Support Blocks, Clamps, Hammer, Pencil and Eye Protection .

Torx Bits Tips

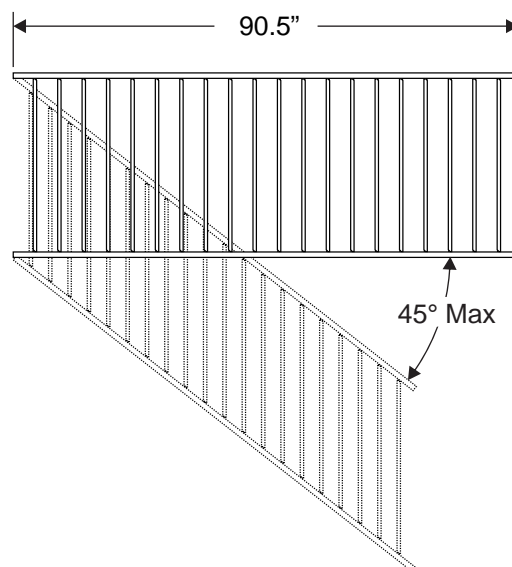
- Have several bits on hand before starting your installation.
- Always pre-drill holes with a 3/16" drill bit.
- Use the lowest possible torque setting on drill. This will help to minimize breakage and twisting of Torx Bits.

AI¹³ Traditional Adjustable Panels

AI¹³ Traditional Adjustable Panel 8' (actual length 90.5")

Available Heights 34" and 40"

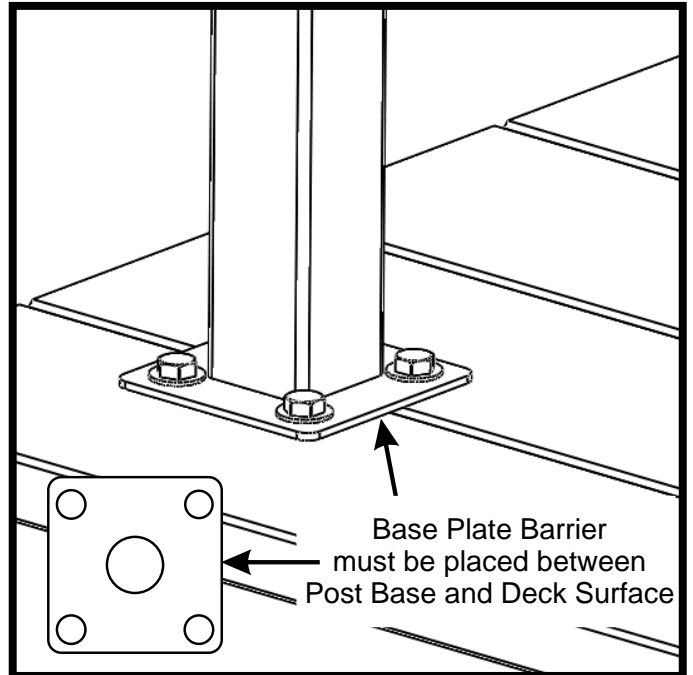
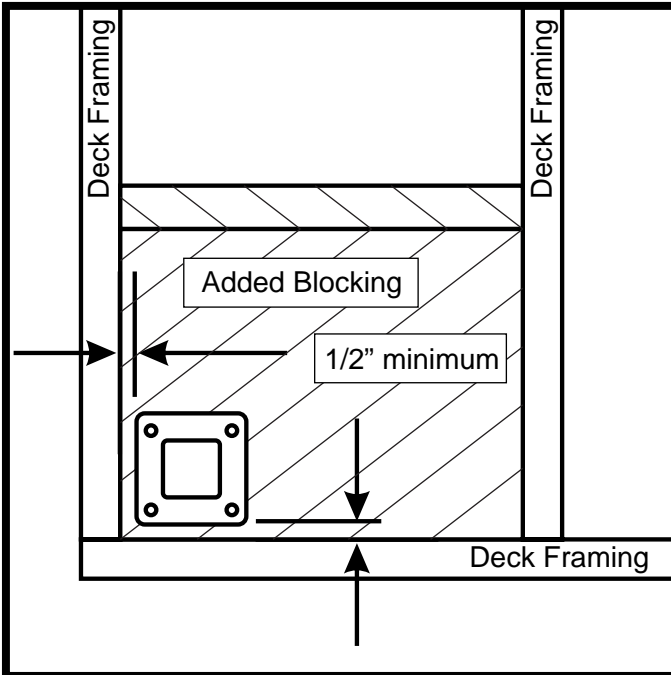
Maximum rake angle 45°



Important - Every stair installation will be different. The rise and run, post position, and post height all need to be carefully laid out before posts are permanently installed and Fortress Traditional Adjustable panels are cut. Al¹³

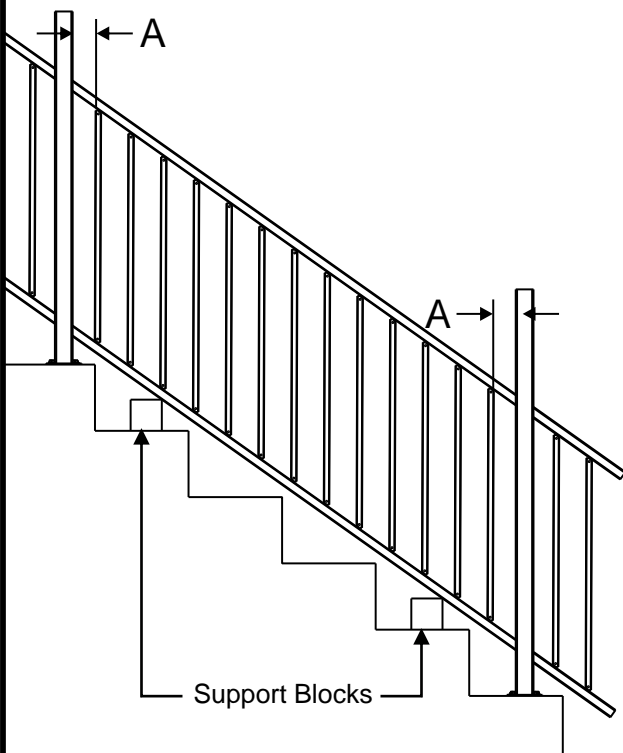
Mount Al¹³ Posts*

- Wood Blocking tied to deck frame must be installed and constructed with treated dimensional lumber with a minimum thickness of 1-1/2".
- Position the edge of post base plate a minimum of 1/2" from the inside edge of rim joist.
- Place included Base Plate Barrier between post base and deck surface.
- Mount posts at appropriate points based on panel length.
- Attach Al¹³ posts with 3/8 X 3-1/2" Hex Head galvanized bolts.



*Reference Fortress Al¹³ Post mounting instructions

Determine Rake and Center Al¹³ Traditional Adjustable Panel Between Al¹³ Posts



Use Al¹³ Traditional Adjustable Panel to determine the angle of stair installation. To do this, use support blocks resting on the stair tread. Position support blocks so that the position of the bottom rail meets the spacing requirement of your building code.

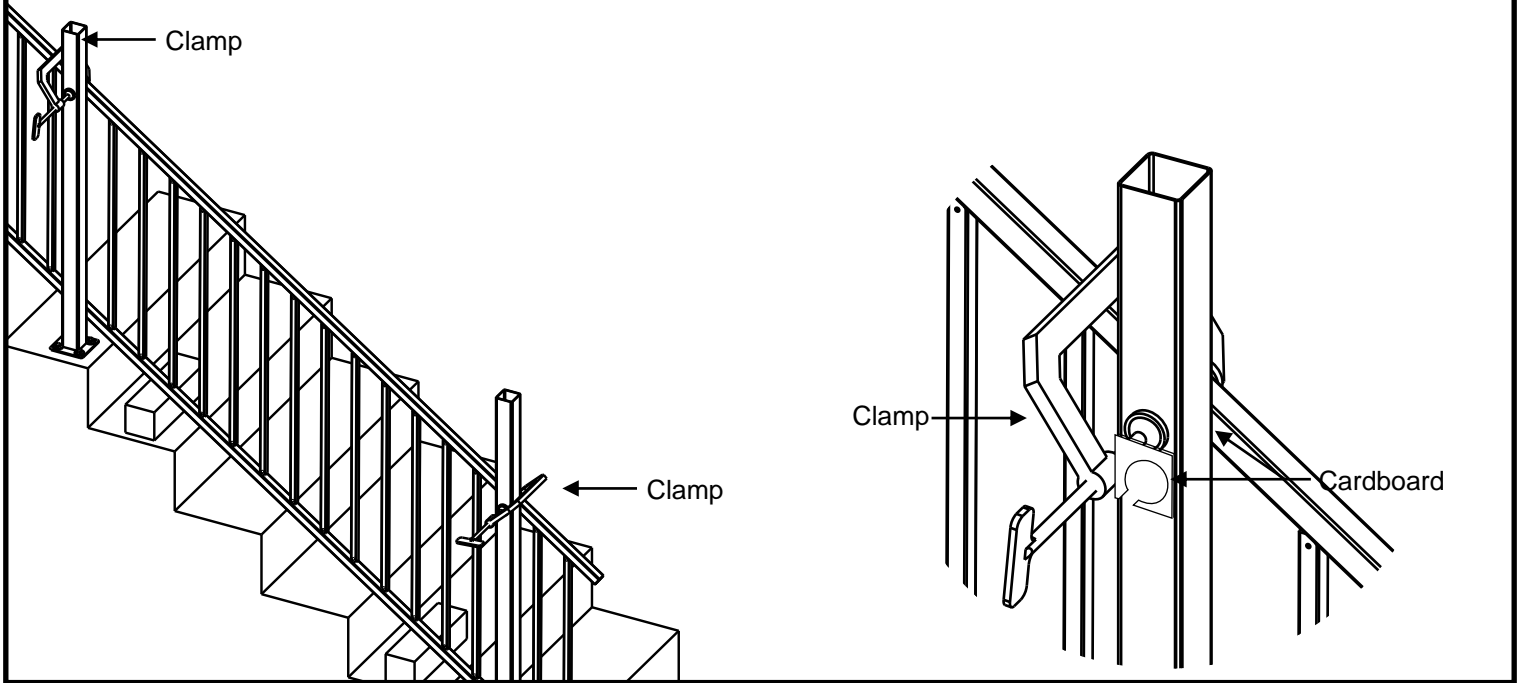
Rake the Al¹³ Traditional Adjustable Panel so that the balusters run parallel with the posts. Center the balusters so that there is an equal amount of rail between the post and baluster at each end (Dimension A).

Make sure that there is a minimum distance of 2-1/2" between the post and first baluster to allow space for the bracket. The maximum allowable distance between the post and the first baluster is 3-15/16".

Mark location of support blocks on steps. Support Blocks will be used in a later step.

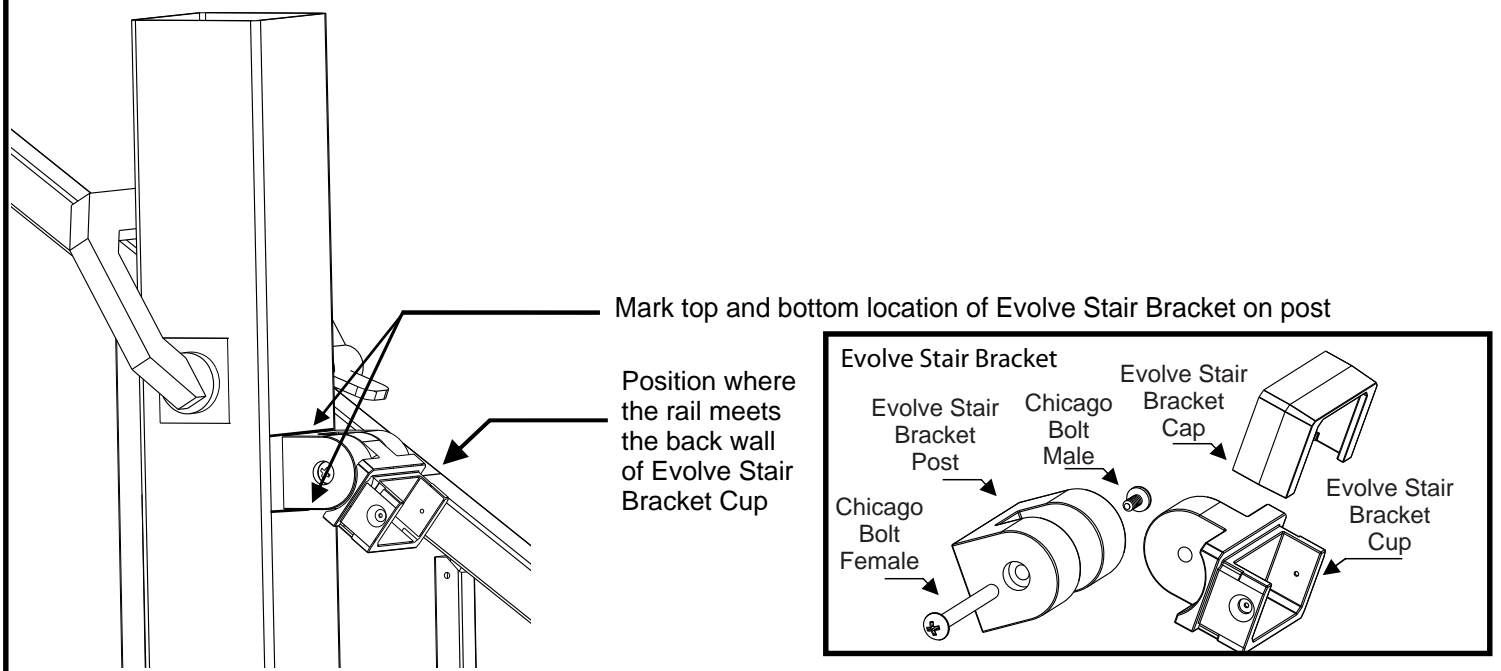
Verify AI¹³ Traditional Adjustable Panel Position and Secure with Clamps

- Verify the position of the AI¹³ Traditional Adjustable Panel. With the help of another person, secure the AI¹³ Traditional Adjustable Panel into the correct position and secure with clamps to AI¹³ Post.
- Place a piece of cardboard between the clamping surfaces and the surfaces of the rails and posts to protect the finish.



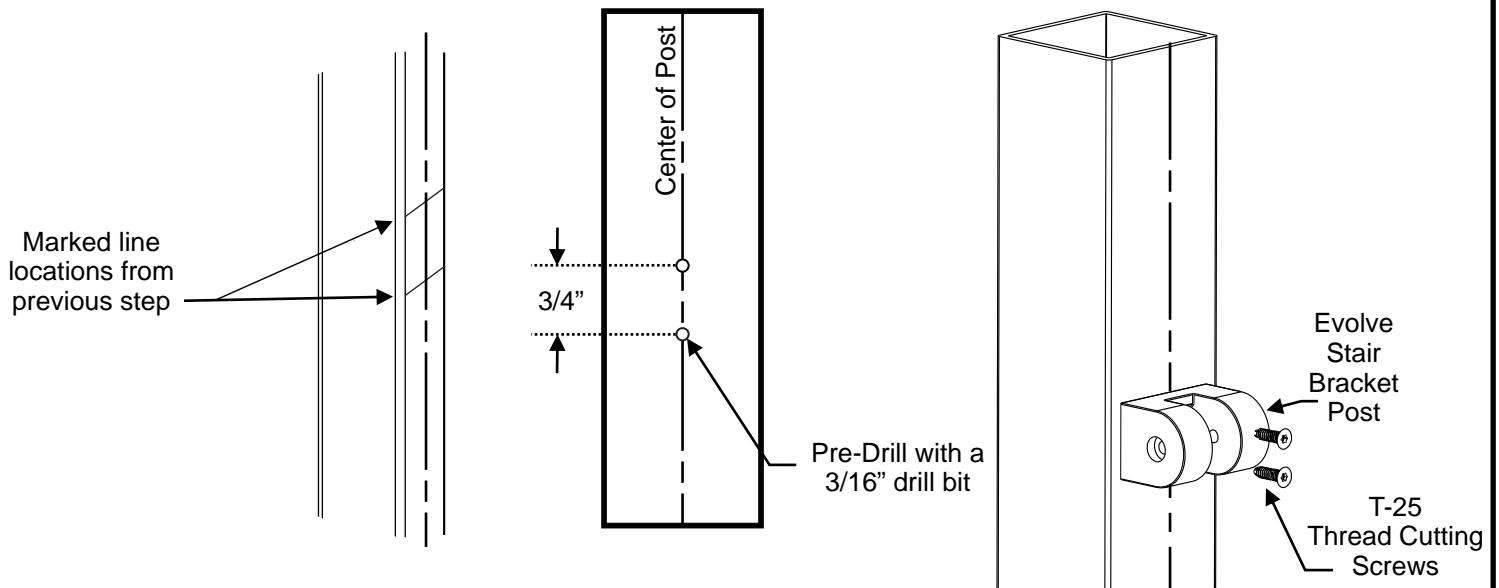
Determine Evolve Stair Bracket Assembly Location and Mark Rail

- Do not install the Evolve Stair Bracket Cap at this time.
- Place the Evolve Stair Bracket Assembly against the AI¹³ Post and position the Evolve Stair Bracket Cup so that it is parallel to the rail. With a pencil mark the position on the top of the rail where the rail meets the back wall of the Evolve Stair Bracket Cup. With the Evolve Stair Bracket in the same position, mark a horizontal line on the post right above and below the Evolve Stair Bracket.
- Repeat this step for all four Evolve Stair Bracket locations. In the next step, the Evolve Stair Bracket Assembly will be disassembled and placed between these lines so that hole locations can be marked and drilled.



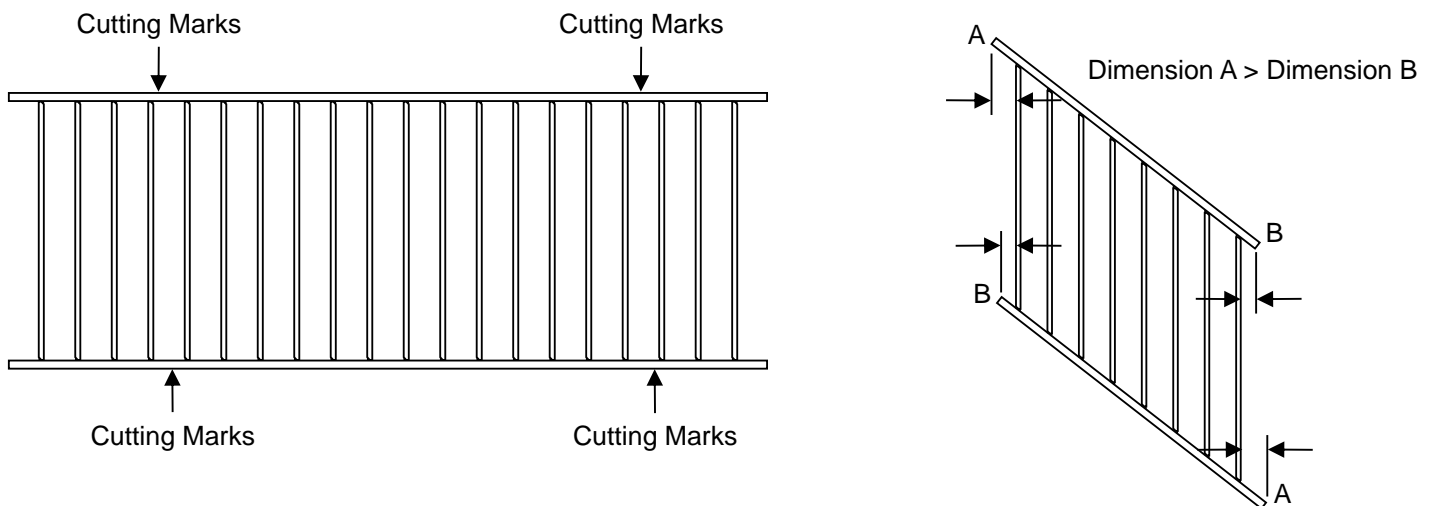
Pre-Drill and Install Evolve Stair Brackets to AI¹³ Posts

- Remove clamps and AI¹³ Traditional Adjustable Panel.
- Mark the centerline of each post. The Evolve Stair Brackets will be installed on the centerline.
- Remove Chicago Bolt from the Evolve Stair Bracket Assembly.
- Place the Evolve Stair Bracket Post piece between the two lines drawn in the previous step and center it on the post.
- Use a 3/16" drill bit to pre-drill holes.
- Attach all Evolve Stair Bracket Post pieces to the posts with supplied T-25 thread cutting screws.
- Reinstall Evolve Stair Bracket Cup to Evolve Stair Bracket Post with Chicago Bolts
- Remove all metal shavings from deck, post base cover, post, and panel before bracket is screwed to post.



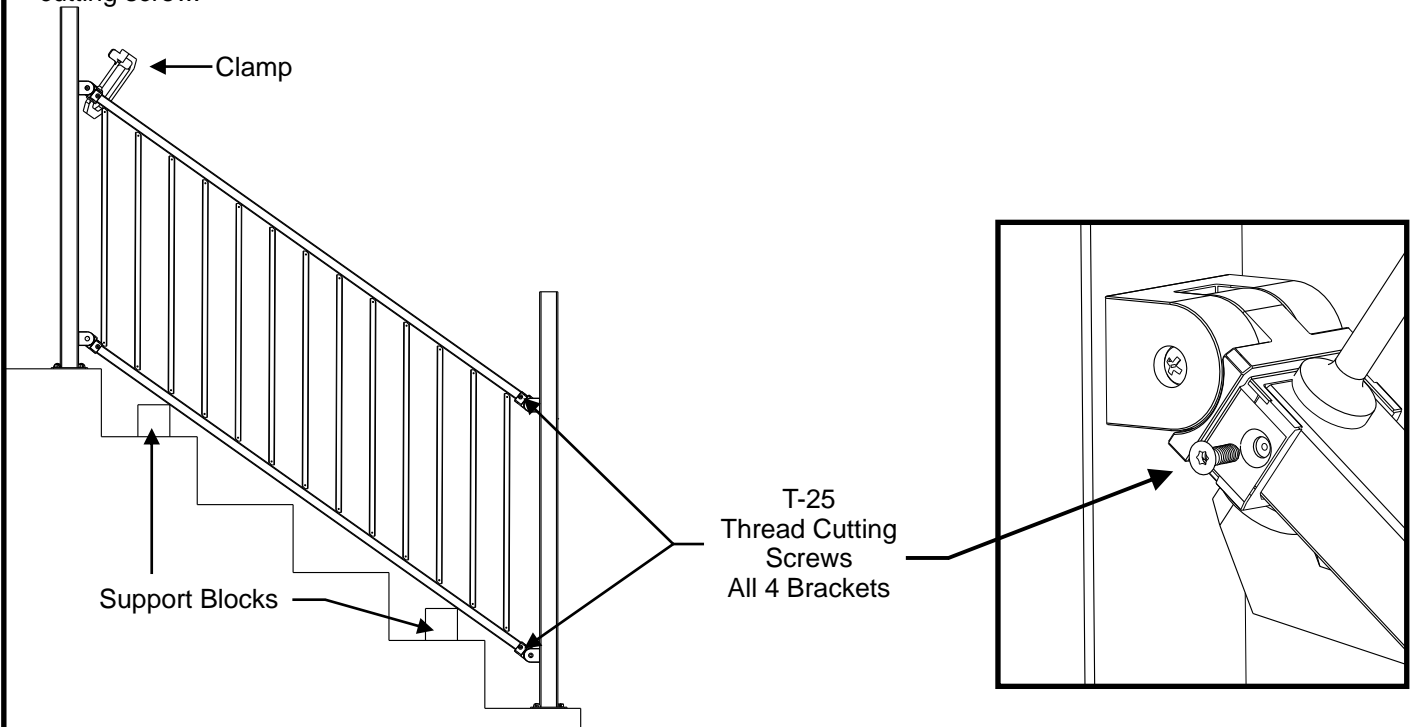
Cutting Fortress AI¹³ Railing Traditional Adjustable Panels

- Rake the panel back to 90° and lay on a flat surface.
- Using a metal cutting blade, cut the rail at the four cutting mark locations from previous step. It is advisable to make a practice cut on a scrap piece of rail before proceeding with the finish cuts.
- The distances from the first baluster to the ends of the rail will be different from the top to bottom rail. The greater the angle of the steps, the more visible the difference will be. This is required in order to keep panel balusters parallel to the post.
- File all cut edges.



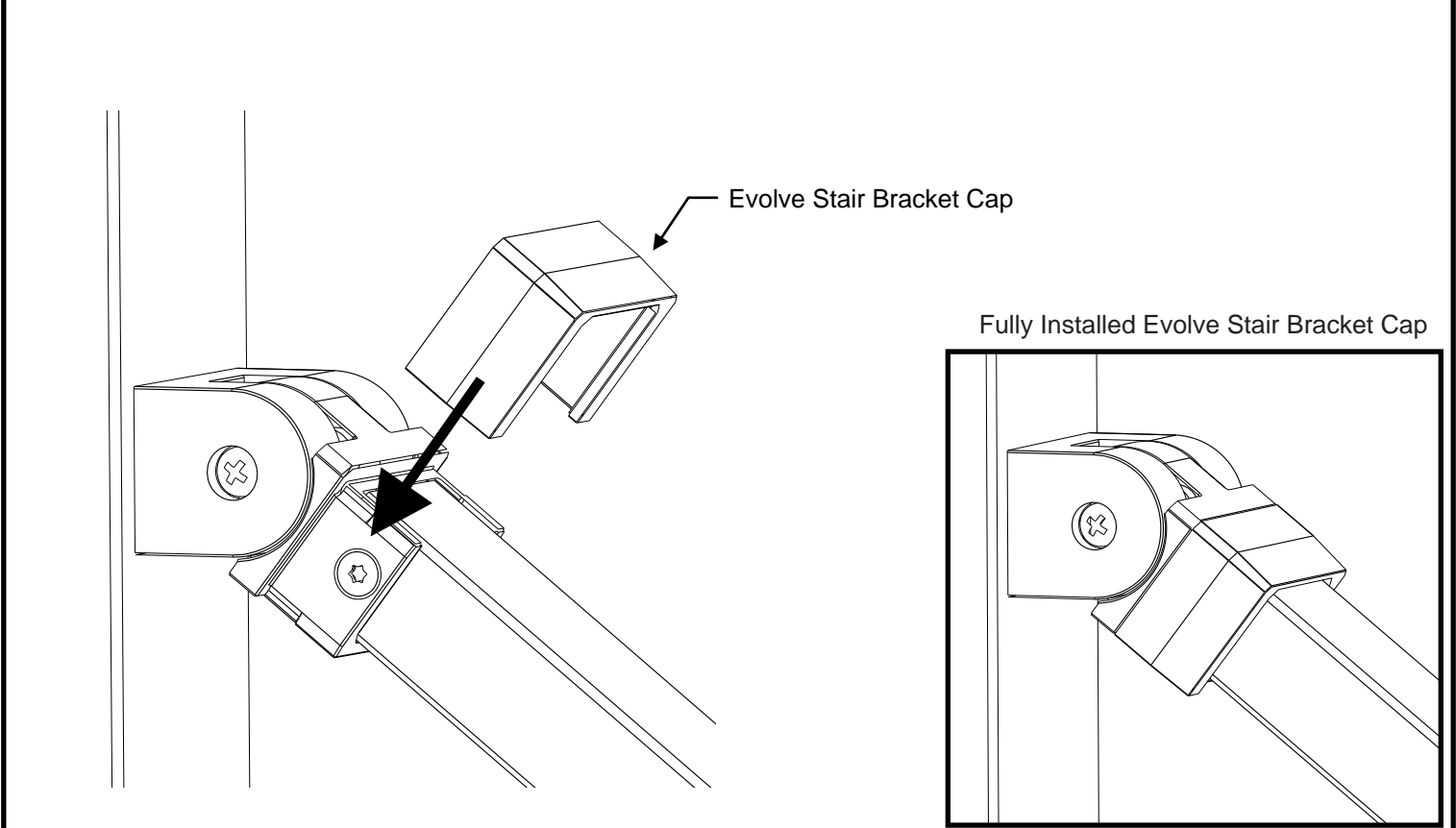
Install AI¹³ Traditional Adjustable Panel

- Reposition support blocks.
- Position AI¹³ Traditional Adjustable Panel so that it aligns with the Evolve Stair Brackets. Use a clamp to hold the AI¹³ Traditional Adjustable Panel in place.
- Check the fit of the AI¹³ Traditional Adjustable Panel and make any required adjustments.
- Pre-drill AI¹³ Traditional Adjustable Panel with a 3/16" drill bit, then secure to Evolve Stair Bracket with a T-25 thread cutting screw.



Install Evolve Stair Bracket Caps

- Remove clamps, then install Evolve Stair Bracket Caps by snapping the Evolve Stair Bracket Cap into place.



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Fortress Al¹³ Posts must always be secured to the deck framing. Fortress Al¹³ Posts should never be attached to only the deck boards.

Note

When cutting Fortress railing, it is very important to complete the following at cut points. Not following the below steps will result in corrosion at the cut areas:

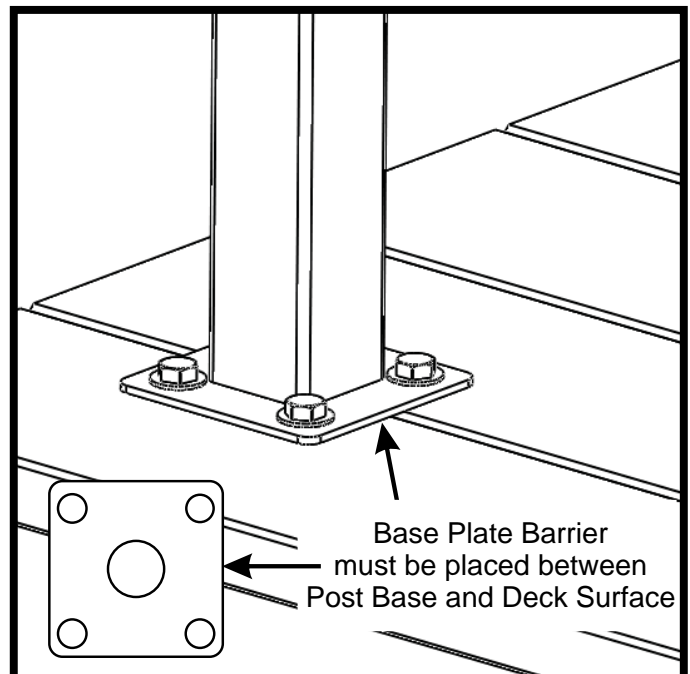
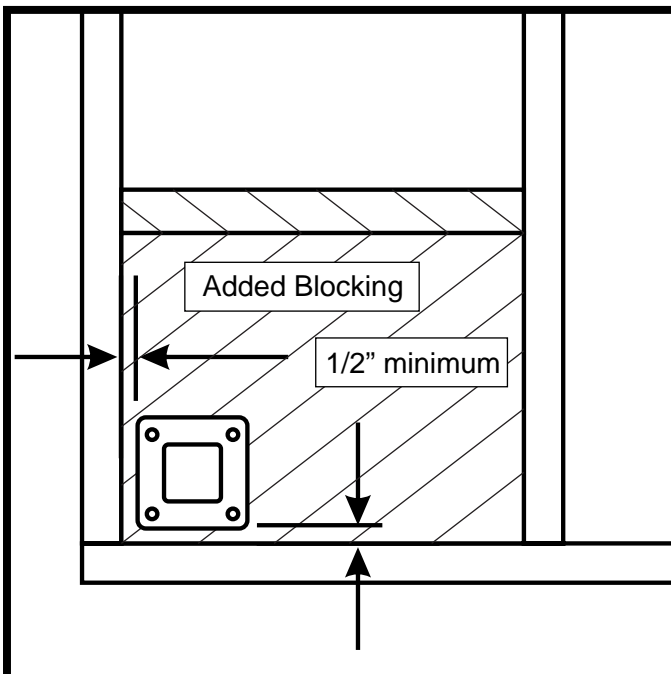
- Remove all metal shavings from the cut area
- File any sharp edges left by cutting. Thoroughly wipe and remove any filings, grime or dirt from the railing. Paint all cut edges with two coats of Fortress touch-up paint.
- Be sure to remove any metal shavings from the surface of deck, patio or balcony to prevent stains on the deck surface.

Required Materials

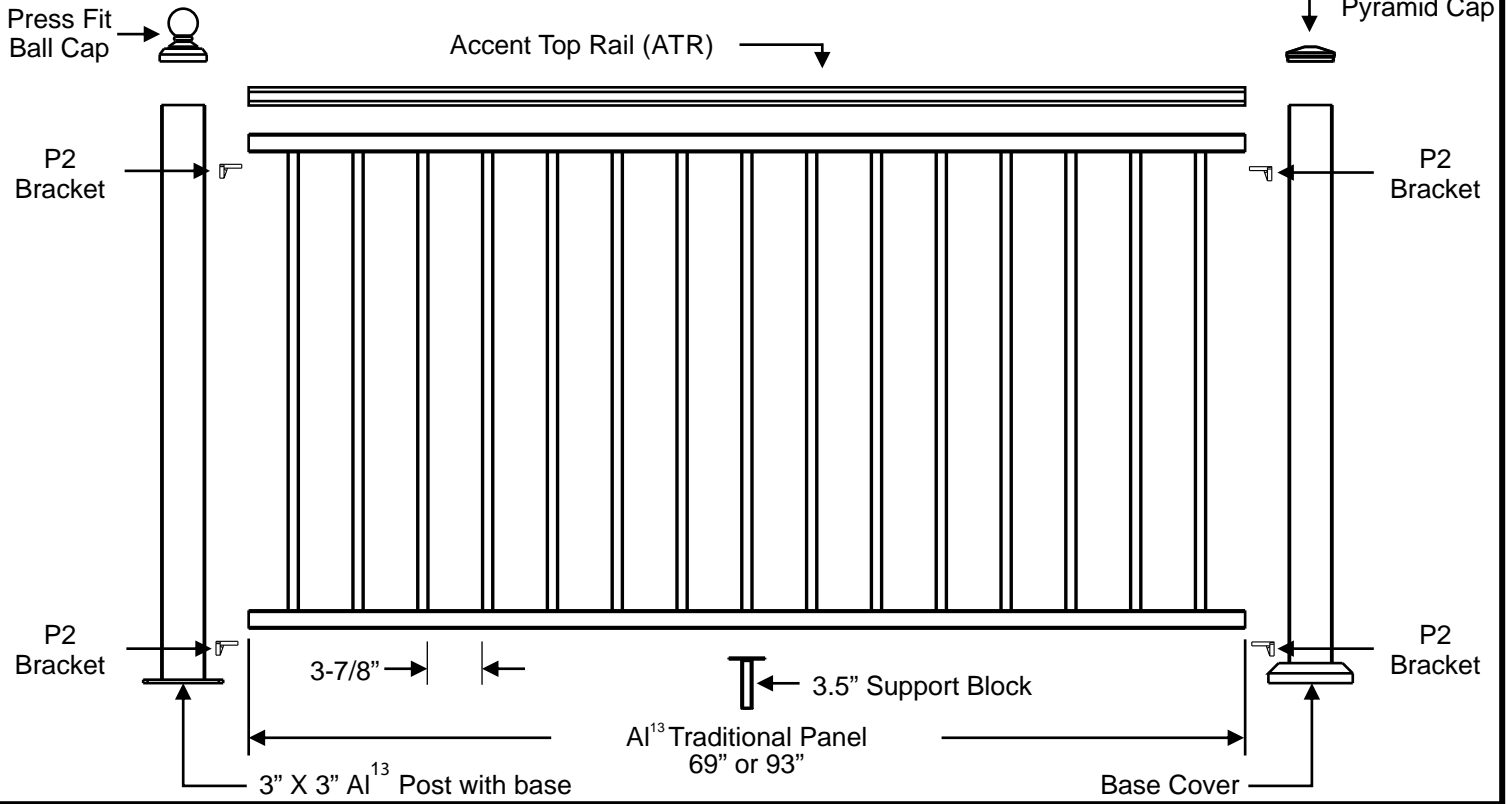
Miter saw with fine tooth blade, Drill, 3/16" Drill Bit, T-25 Driver Bit, Drill Bit Extender, Tape Measure, Wrenches, Speed Square, Center Punch, Fortress Touch-up paint, 3-1/2" Support Blocks and Hammer.

Mount Al¹³ Posts

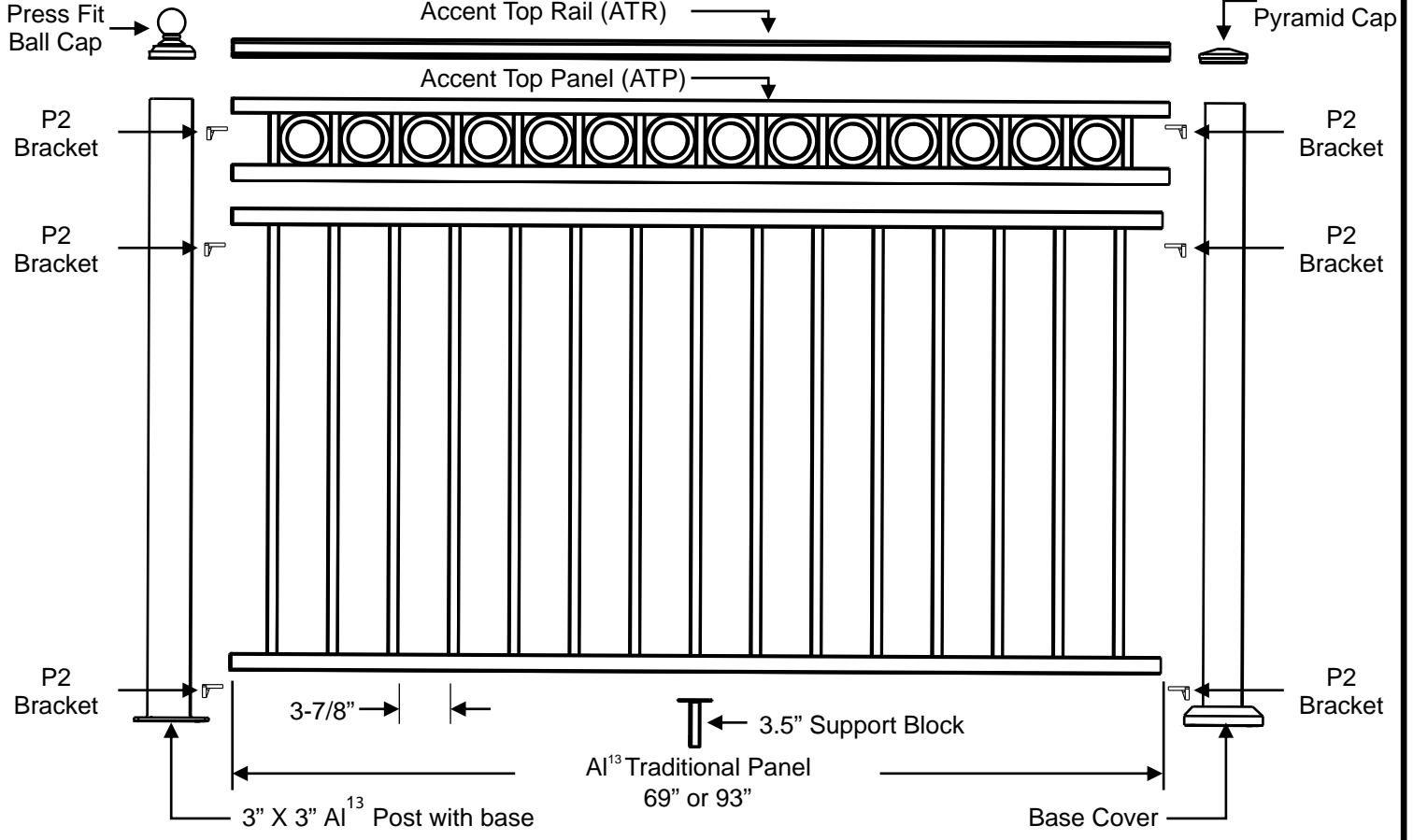
- Wood Blocking tied to deck frame must be installed and constructed with treated dimensional lumber with a minimum thickness of 1-1/2".
- Al¹³ Post Spacing must not exceed 96" for 8' Panels and 72" for 6' Panels.
- Position the edge of post base plate a minimum of 1/2" from the inside edge of rim joist.
- Place Base Plate Barrier between post base and deck surface.
- Mount posts at appropriate points based on panel length.
- Attach Al¹³ posts with 3/8" X 3-1/2" Hex Head galvanized bolts.



Al¹³ Traditional Panel Installation Options



Al¹³ Traditional Panel with Accent Top Panel Installation Options



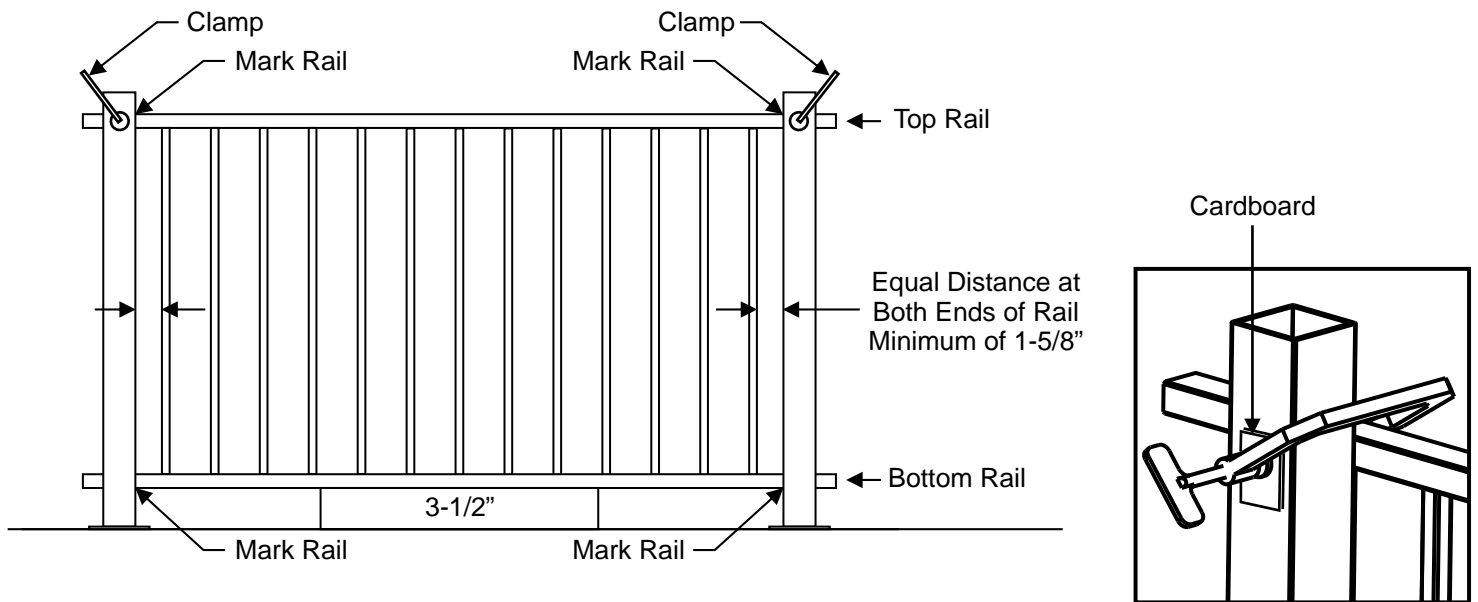
Al¹³ Traditional Panel and Al¹³ Post Configurations

Railing Panel Height	Railing Panel without Accent Top Panel Installed Panel Height* Required Post		Railing Panel with Accent Top Panel Installed Panel Height with ATP* Required Post	
34"	37-1/2"	39-1/2"	42-1/2"	45-1/2"
40"	43-1/2"	45-1/2"	X	X

*Heights includes a 3-1/2" space between deck surface and bottom edge of bottom rail.

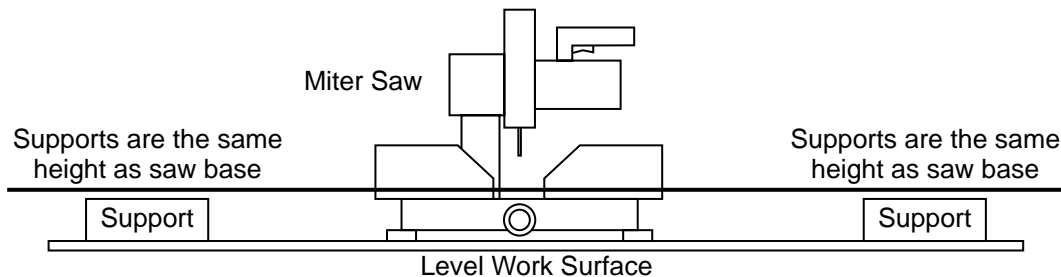
Al¹³ Traditional Panel Installation with P2 Bracket

- Check posts to ensure that all posts are square and straight. Shim posts as required.
- Support Panel on 3-1/2" Support Blocks.
- Center Panel between the post so that there is a equal distance between the last baluster and post at each end.
- Minimum distance between the last picket and post is 1-5/8"
- Clamp Rail to Post at each end to prevent movement. Place a piece of cardboard between clamp and Al¹³ Post & Panel
- Mark the rails so that the end cuts will be flush with the post.
- Mark the top and bottom of Panel. This will be needed in a later step.



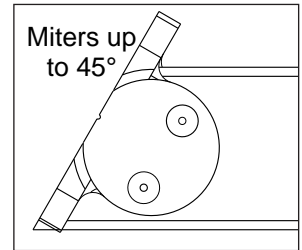
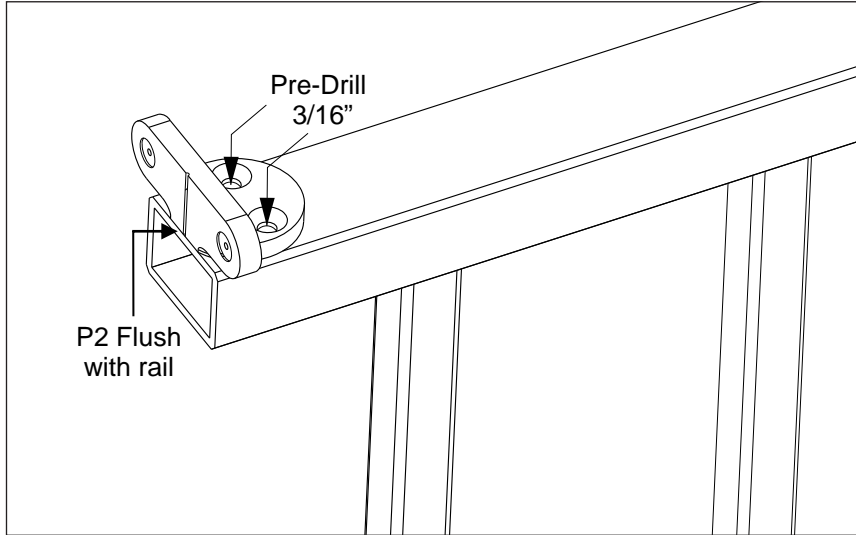
Cutting Al¹³ Traditional Panels

- The best way to cut Panels is to use a miter saw.
- A fine tooth carbide tipped blade designed to cut non-ferrous materials is recommended.
- Setup a work surface that is level and large enough to support all four corners of the Panel.
- Supports should be the same height as saw base to keep panel straight and level when cutting Panel.
- With Panels completely supported, make cuts at the marked locations from previous step.
- Al¹³ Panels can be miter cut at an angle up to 45°
- Remove any burrs or shavings from cut edges. Apply two coats of Fortress touch-up paint to all cut edges.
- Check the fit of panel between post. Be careful not to scratch post with end cuts.



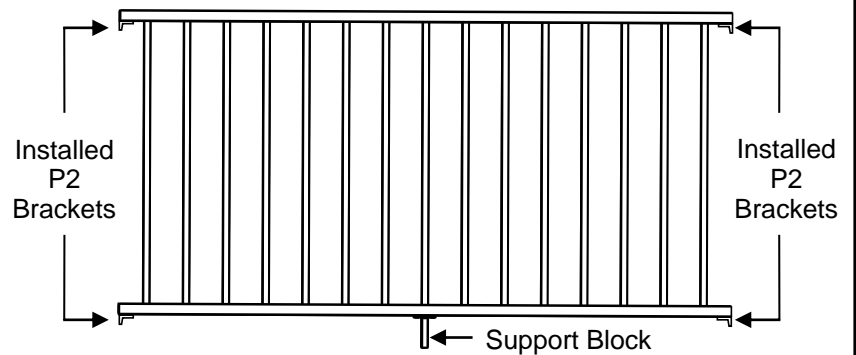
AI¹³ P2 Bracket Installation

- Turn panel upside-down.
- Position P2 Bracket with backside flush to the end of the rail as shown.
- Mark the center point of the two screw holes with a center punch.
- Pre-drill holes with a 3/16" drill bit.
- Secure Bracket with supplied T-25 Drive Thread Cutting Screws.
- Note: Tips for cutting rails for angled installations with P2 brackets can be found in the Accent Top Panel installation portion of the Evolve Angle Bracket Instructions.



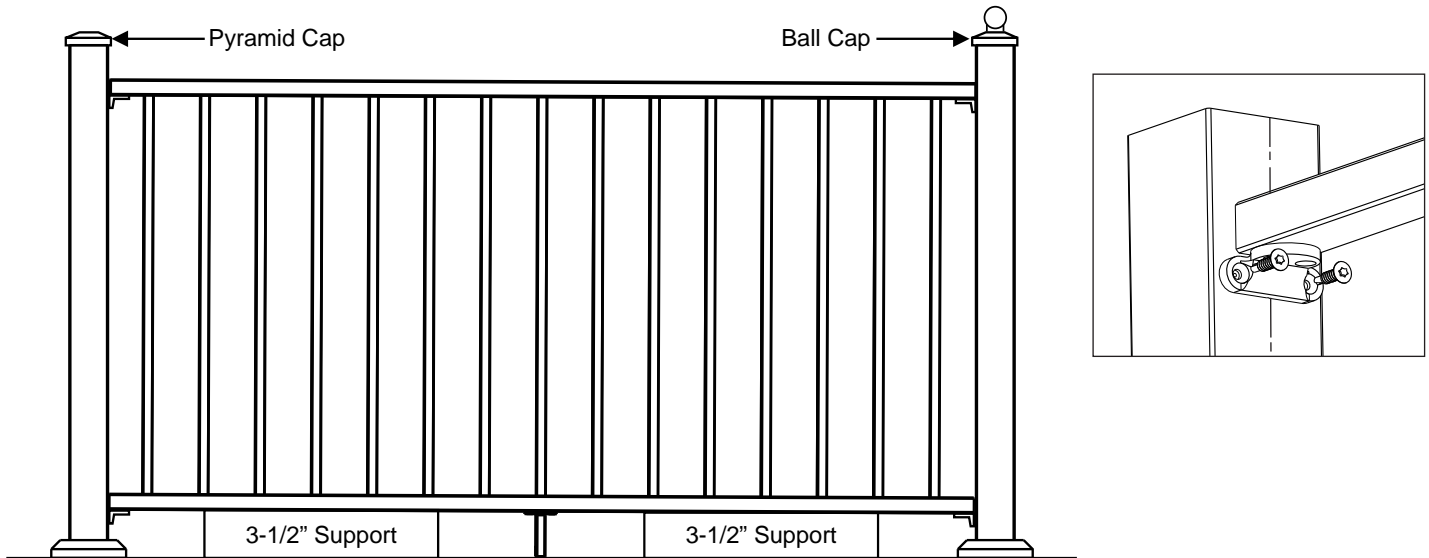
AI¹³ Support Block Installation

- Support are recommended for rail spans over 72"
- Mark the center of Bottom Rail.
- Position Support Block and mark hole locations.
- Pre-drill with a 3/16" Drill Bit
- Secure Support Block with supplied screws.



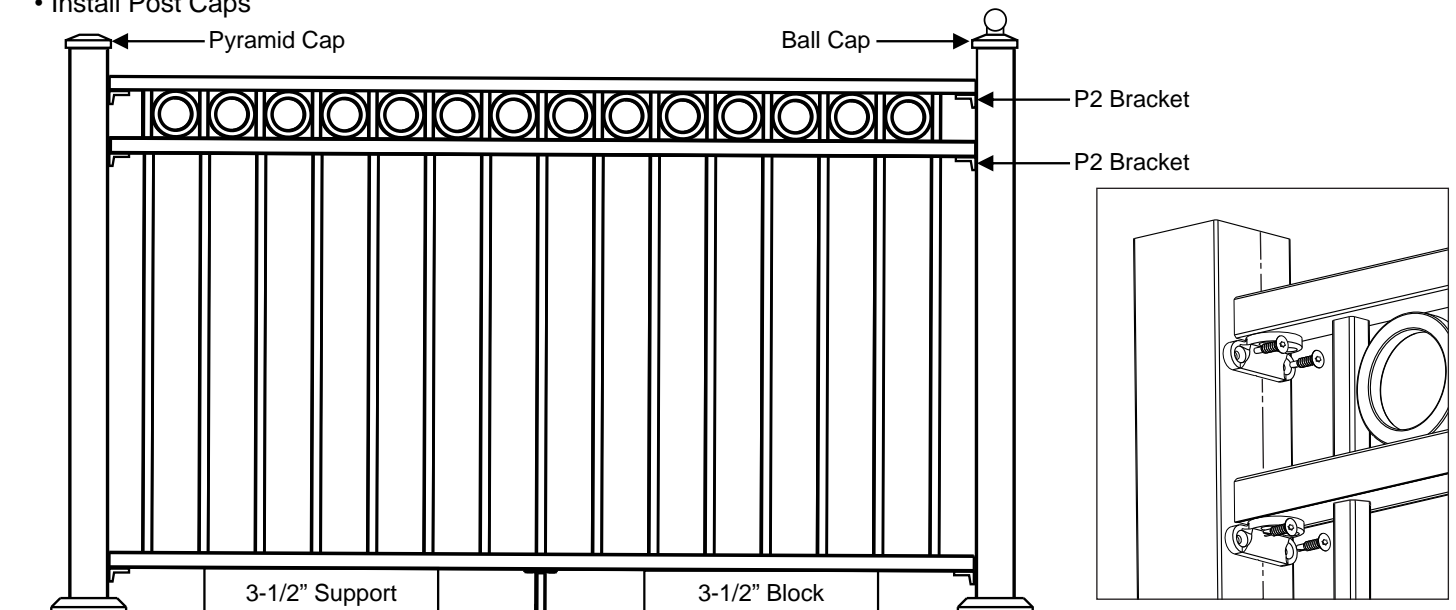
Installing AI¹³ Traditional Rail Panels to AI¹³ Posts¹³

- If using AI¹³ Base Covers install them now.
- Place a 3-1/2" Support near each post.
- Place Panel with Brackets and Support Blocks installed between Posts.
- Center Panel on each Post.
- With Panel in position pre-drill screw locations where Brackets meet Posts with a 3/16" drill bit.
- Secure Bracket to Post with supplied T-25 Drive Thread Cutting Screws.
- If installing a AI¹³ Accent Top Rail (ATR), Cut ATR to length and snap onto top rail. Use epoxy to secure ATR to top rail.
- Install Post Caps



Installing AI¹³ Traditional Panels with AI¹³ Accent Top Panel (ATP) to AI¹³ Posts¹³

- If using AI¹³ Base Covers install them now.
- Place a 3-1/2" support near each post.
- Place Panel with Brackets and Support installed between posts and on Support Blocks.
- Center Panel on each Post.
- With Panel in position pre-drill screw locations where Brackets meet Posts with a 3/16" drill bit.
- Secure Brackets to Posts with supplied T-25 Drive Thread Cutting Screws.
- Install P2 Bracket to AI¹³ ATP
- Slide ATP with P2 Bracket installed over the top rail.
- Secure Brackets to Posts with supplied T-25 Drive Thread Cutting Screws.
- Install Post Caps



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Fortress Al¹³ Posts must always be secured to the deck framing. Fortress Al¹³ Posts should never be attached to only the deck boards.

Read Instructions Completely Before Starting Installation

Note

When cutting Fortress railing, it is very important to complete the following at cut points. Not following the below steps will result in corrosion at the cut areas:

- Remove all metal shavings from the cut area
- File any sharp edges left by cutting. Thoroughly wipe and remove any filings, grime or dirt from the railing.
- Be sure to remove any metal shavings from the surface of deck, patio or balcony to prevent stains on the deck surface.

Required Materials

Eye Protection, Miter Saw with fine tooth blade, Tape Measure, Speed Square, Pencil, Double Sided Foam Tape, Caulking Gun and Fortress 300 Fast Epoxy.

Cutting the Fortress Al¹³ Stair / Angle Rail Joint Cover

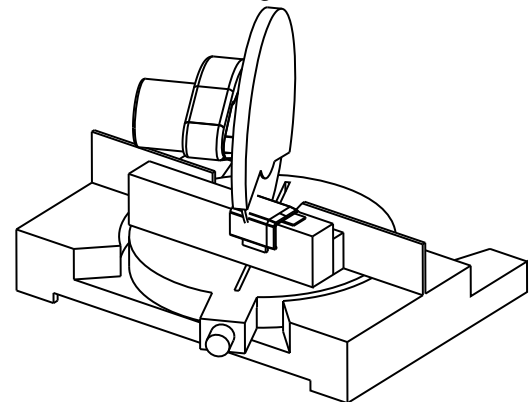
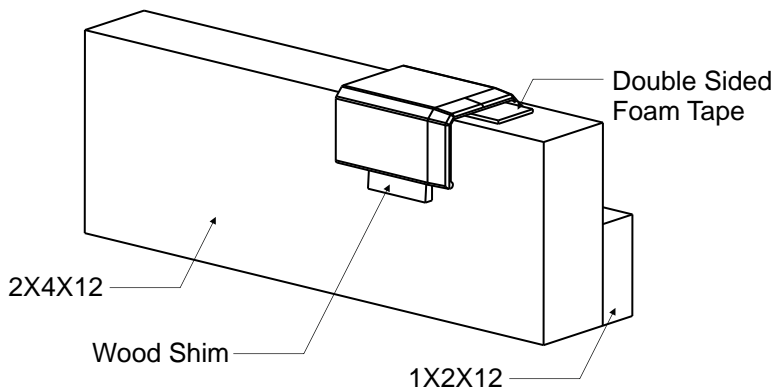
Read and understand all instructions. Failure to follow all instructions listed below, may result in serious personal injury.

Never hold a workpiece that is too small.

Keep hands away from cutting area. Do not reach underneath work or in blade cutting path with your hands and fingers for any reason.



- The Fortress Al¹³ Stair / Angle Rail Joint Cover can be cut to fit angles from 0° to 45°.
- The best way to cut the Fortress Al¹³ Stair / Angle Rail Joint Cover is to use a miter saw.
- A fine tooth carbide tipped blade designed to cut non-ferrous materials is recommended.
- Determine the required angle. Use a scrap piece of lumber to make a test cut at the required angle.
- Cut a 12" long block from a scrap piece of 2x4. This will support the Fortress Al¹³ Stair / Angle Rail Joint Cover when making the cut.
- Cut a 12" long block from a scrap piece of 1x2. This is used to allow for clearance between the saw fence and the Fortress Al¹³ Stair / Angle Rail Joint Cover.
- Use a piece of double sided foam tape to hold the Fortress Al¹³ Stair / Angle Rail Joint Cover to the 2x4.
- Place a wood shim between the 2x4 and Fortress Al¹³ Stair / Angle Rail Joint Cover to hold it tight.

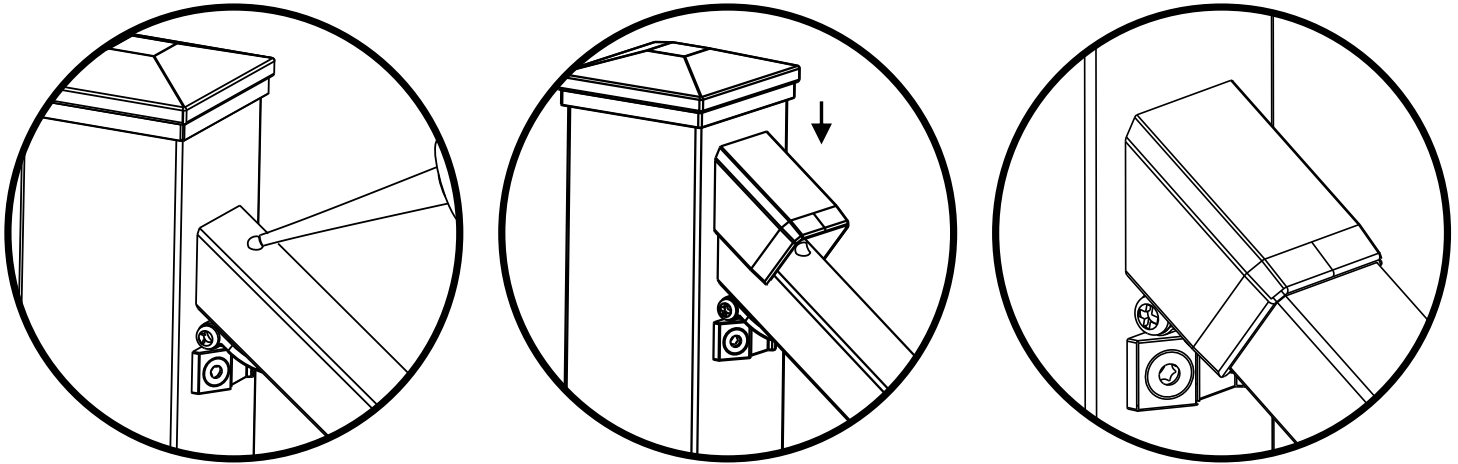


Keep hands away from cutting area

Fortress AI¹³ Stair Joint Cover Installation

The Fortress AI¹³ Stair Rail Joint Cover is optional and it is used to cover gaps between the Fortress AI¹³ Post and Fortress AI¹³ Top and Bottom Rails on stair installations of Fortress AI¹³ Traditional Adjustable Rail Panels.

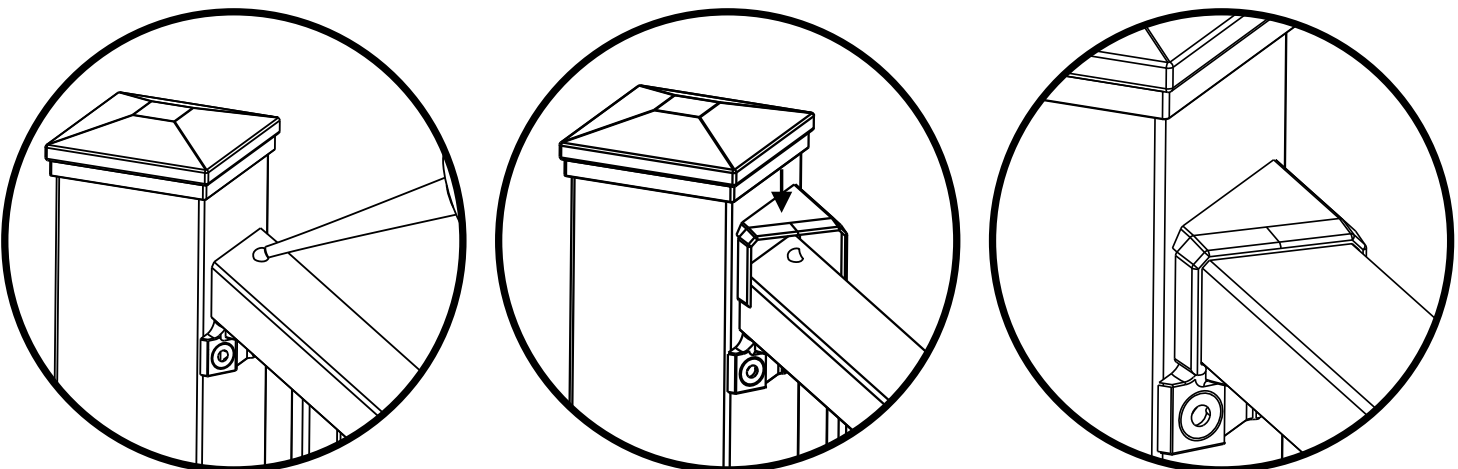
- The Fortress AI¹³ Stair Rail Joint Cover snaps over the top and bottom rails and is held in place with Fortress 300 Fast Epoxy.
- After all Fortress AI¹³ Traditional Adjustable Rail Panels are installed, test fit the Fortress AI¹³ Stair Rail Joint Covers.
- Do Not Apply Epoxy Until All Fortress AI¹³ Rail Joint Covers are test fit . Fortress Epoxy has a short working time.
- Apply a pea size amount of Fortress 300 Fast Epoxy as shown.
- Install Fortress AI¹³ Stair Rail Joint Covers by sliding over the Top and Bottom Rails.
- Immediately wipe any excess epoxy from the rail surface.



Fortress AI¹³ Angle Rail Joint Cover Installation

The Fortress AI¹³ Angle Rail Joint Cover is optional and it is used to cover gaps between the Fortress AI¹³ Post and Fortress AI¹³ Top and Bottom Rails on angle installations of Fortress AI¹³ Traditional Rail Panels.

- The Fortress AI¹³ Angle Rail Joint Cover snaps over the top and bottom rails and is held in place with Fortress 300 Fast Epoxy.
- After all Fortress AI¹³ Traditional Rail Panels are installed, test fit the Fortress AI¹³ Angle Rail Joint Covers.
- Do Not Apply Epoxy Until All Fortress AI¹³ Rail Joint Covers are test fit . Fortress Epoxy has a short working time.
- Apply a pea size amount of Fortress 300 Fast Epoxy as shown.
- Install Fortress AI¹³ Angle Rail Joint Covers by sliding over the Top and Bottom Rails.
- Immediately wipe any excess epoxy from the rail surface.



AI¹³

ALUMINUM RAILING SIMPLIFIED

GATES



It is the responsibility of the installer to meet all code and safety requirements, and to obtain all required building permits. The deck and railing installer should determine and implement appropriate installation techniques for each installation situation. The Fortress Company or its distributors shall not be held liable for improper or unsafe installations.

Fortress Al¹³ Posts must always be secured to the deck framing. Fortress Al¹³ Posts should never be attached to only the deck boards.

Read Instructions Completely Before Starting Installation

Note

When cutting Fortress railing, it is very important to complete the following at cut points. Not following the below steps will result in corrosion at the cut areas:

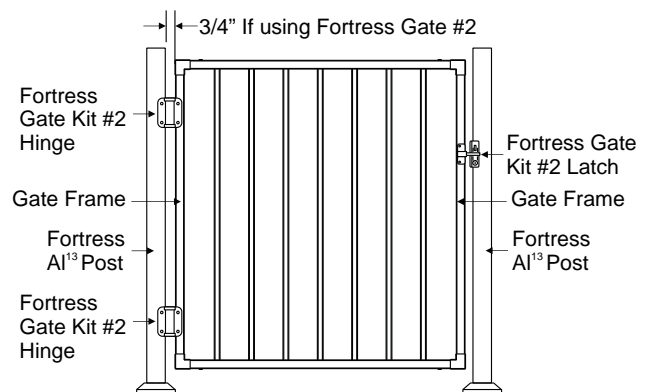
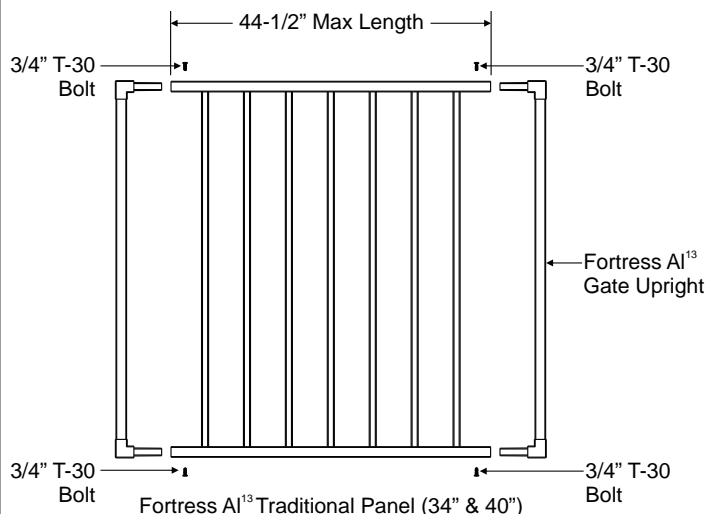
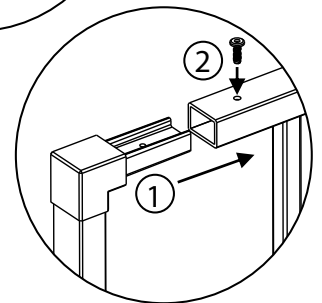
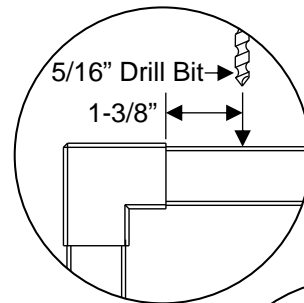
- Remove all metal shavings from the cut area
- File any sharp edges left by cutting. Thoroughly wipe and remove any filings, grime or dirt from the railing.
- Apply two coats of Fortress zinc based touch-up paint to the cut area. Allow paint to dry.
- Be sure to remove any metal shavings from the surface of deck, patio or balcony to prevent damaging the deck surface.

Required Materials

Drill, 5/16" Drill Bit, T-30 Driver Bit, Metal Cutting Saw, Tape Measure, Pencil, Speed Square, Center Punch, Touch Up Paint, Rubber Mallet and Eye Protection.

Fortress Al¹³ Gate Upright Assembly

- Maximum gate width is 48"
- If using Fortress Gate Kit #2, allow 3/4" space between Fortress Al¹³ Gate Uprights and posts on each side for hinges and latch.
- Max spacing between the Fortress Al¹³ Gate Upright and the first baluster on each side of gate is 3-7/8".
- To determine the required length of panel between Fortress Al¹³ Gate Uprights cut the panel 1-3/4" shorter than the finished gate width at each end. For example if the desired gate width is 48" subtract 1-3/4" from each end of panel. The cut panel length will be 44-1/2".
- Align Fortress Al¹³ Traditional Panel top and bottom rails with Fortress Al¹³ Gate Uprights. Using a rubber mallet drive Fortress Al¹³ Gate Uprights into the rails.
- Measure 1-3/8" from the edge of Fortress Al¹³ Gate Uprights at each corner. In the center of the rail drill a 5/16" hole. Secure panel to Fortress Al¹³ Gate Uprights with the supplied 3/4" T-30 Bolts.



HANDRAILS

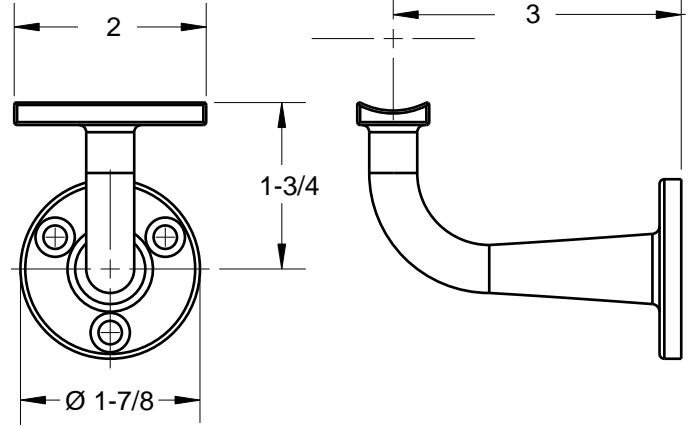
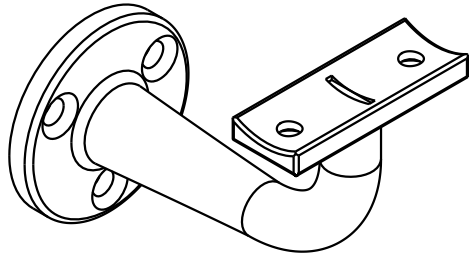
SIMPLIFIED

ROUND



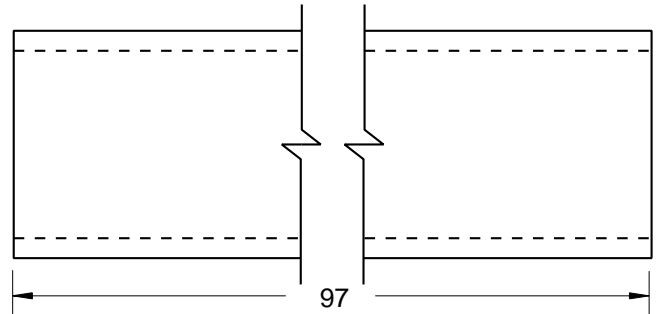
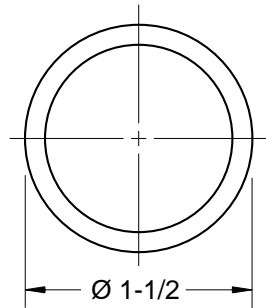
Round Hand Rail Bracket

Used to attach Round Hand Rail Components to Posts and Vertical Wall Surfaces.



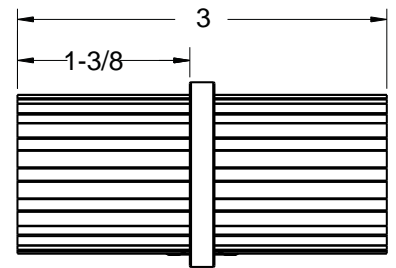
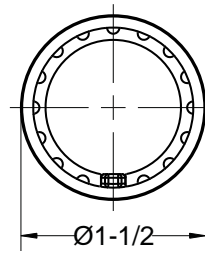
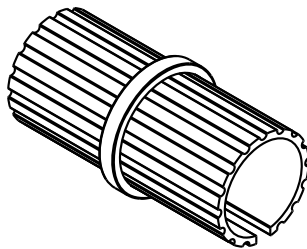
Round Hand Rail

Used to create Handrail Sections between brackets.



Round Hand Rail Splice

Used to join mating parts of the Round Hand Rail System that do not already have ribbed insert sections.



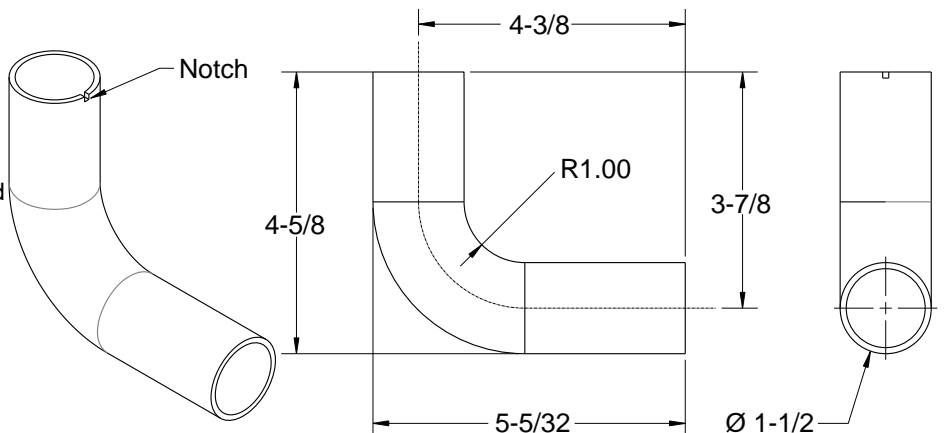
Round Hand Rail Return

Used to create corners and continuous rails around posts.

The Round Hand Rail Return has two different straight lengths 4-5/8" (**marked with a notch**) and 5-5/32" that allow installer to create a continuous Hand Rail around 2" and 3" Posts without modifying the Round Hand Rail Return.

For a continuous wrap around a 2" Post butt the two 4-5/8" lengths together.

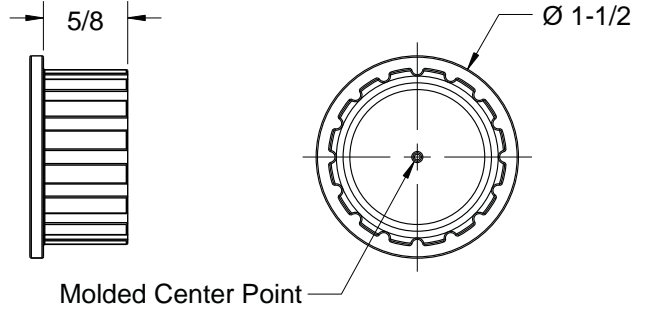
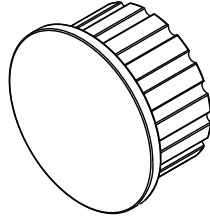
For a continuous wrap around a 3" Post butt the two 5-5/32" lengths together.



Round Hand Rail Cap Plug

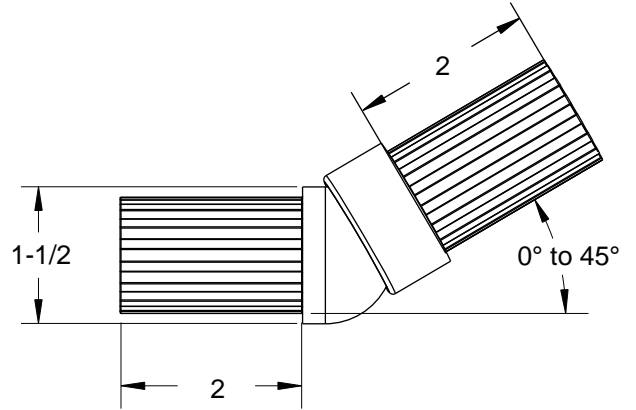
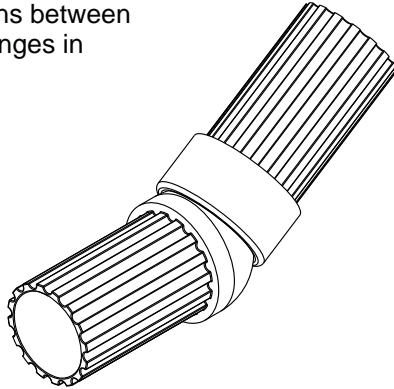
Used to cap open ends of the Round Hand Rail System.

Can Also be used to terminate a Round Hand Rail into a vertical wall surface by pre-drilling at the molded center point and securing to wall surface with a screw.



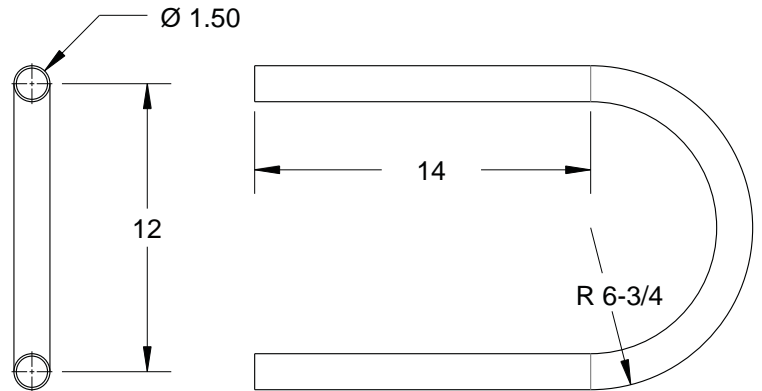
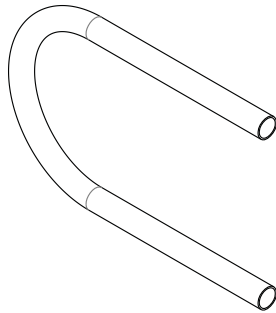
Round Hand Rail Angle Adjuster

Allows for smooth transitions between Hand Rail section with changes in elevation.



Round Hand Rail 180° Loop

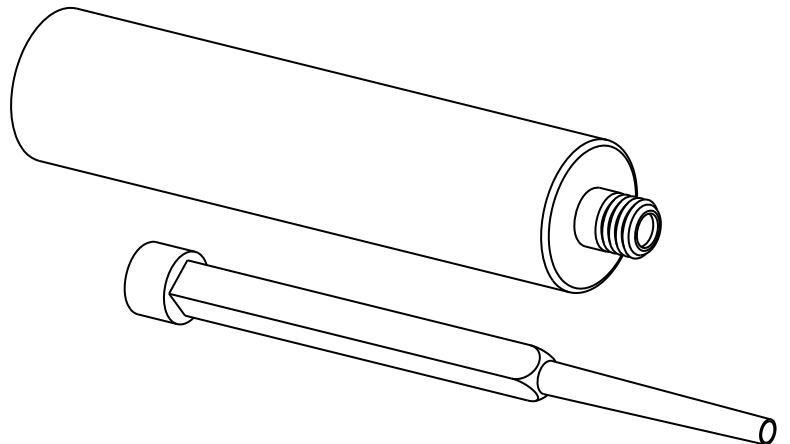
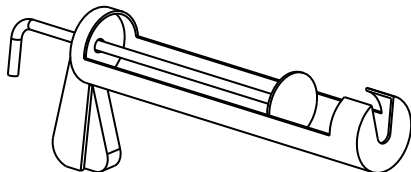
Used to terminate handrails into posts.



Fortress Pro-Poxy Kit (250ml)

2 part epoxy used to join Round Hand Rail Components. Use a standard chalking gun to dispense. Replacement Static Mixers sold separately.

Product Cures Quickly. Do not apply until all parts are tested to fit.





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