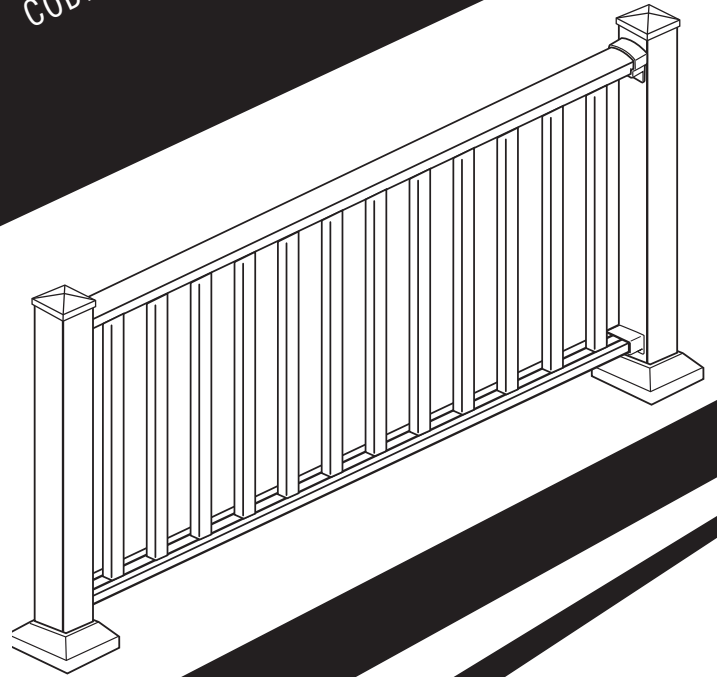


# Aluminum Railing Systems

CODE COMPLIANT RAILING FOR YOUR LIFESTYLE

## Care and Maintenance

While most powder coat finishes are tougher and much more flexible than conventional solvent based paints, they are about the same hardness as automotive paint and can scratch. To clean a powder coated surface, use the same care and methods you would use to clean your car. Gently wash with a clean, soft cloth and a mild detergent followed by a clear water rinse. Even though most powder coatings are highly resistant, certain solvents can harm them. Avoid contact with nail polish remover, paint or lacquer thinner, motor oils, transmission and brake fluids or solvent based cleaning fluids. If any of these should contact the powder coated surface, immediately wipe the area with a soft, clean cloth, and wash as described above.



## Congratulations!

You are on your way to a maintenance free handrail system that is easily assembled and installed. With your system, you'll feel safe being protected by the tremendous strength of its aluminum alloy components, plus be comforted knowing the hardened powder coated finish will last year after year.

Please take a moment to read the instructions before you begin assembling your project.

[www.maddenmetals.com](http://www.maddenmetals.com)

For assistance call Madden Manufacturing  
573-365-7085

## Contents

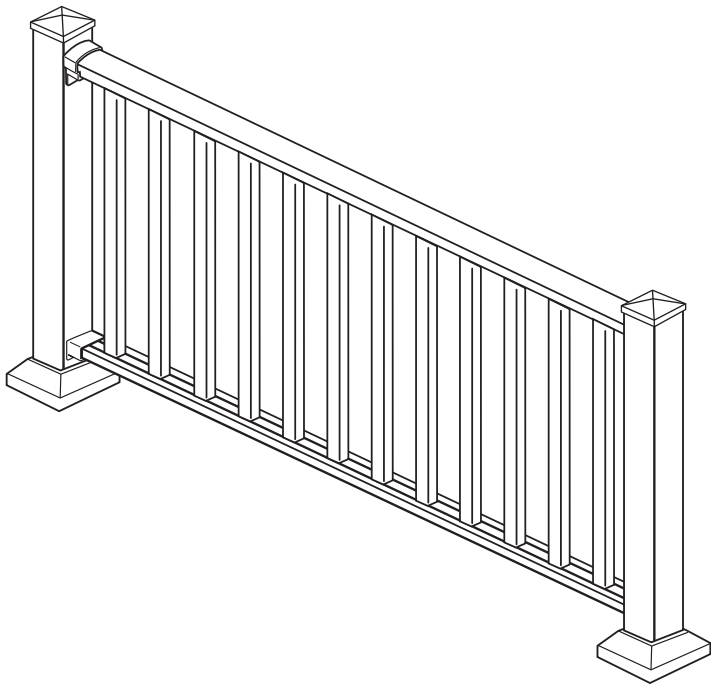
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Please take a moment to read the instructions before beginning your installation.

## Introduction

Check the contents of box with these instructions to verify all parts are present. This will allow you to become familiar with the components of your new system.

- Inspect all component parts for familiarity
- Layout recommended tools
- Before cutting any component, know its use – “measure twice and cut once.”
- The included wood fasteners (gray head) are ACQ treated lumber approved.
- The included concrete fasteners are for brick (Tapcon) and concrete (Wedgebolt).



## Tools You Will Need

(not included)

- A - Level
- B - Chop Saw (60 to 80 tooth wood blade)
- C - Safety Glasses
- D - 5/16" Hex Bit Driver  
1/4" Hex Bit Driver(long shaft)
- E - Tape Measure
- F - Screw or Impact Gun
- G - Pencil
- H - Drill Bits: 1/8" metal/wood, 1/4" wood,  
1/4"x 4"concrete Masonary
- I - (2) pcs 10" 2 x 4 lumber to support  
railing during installation (optional)
- J - Ear Protection

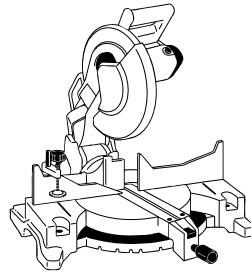
### Notice

For saltwater environments we recommend grade 18-8 stainless steel fasteners or equivalent. Stainless steel fasteners not included.

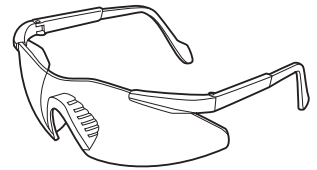
A



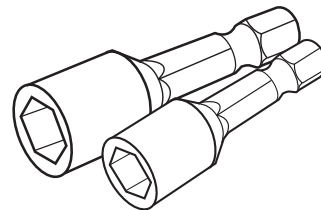
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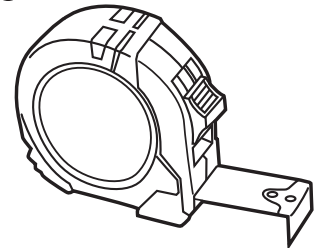
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D



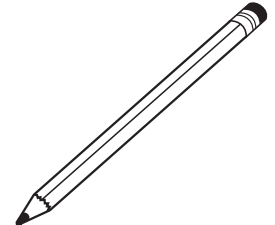
E



F



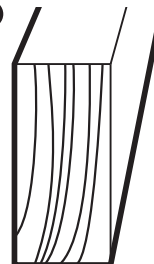
G



H



I



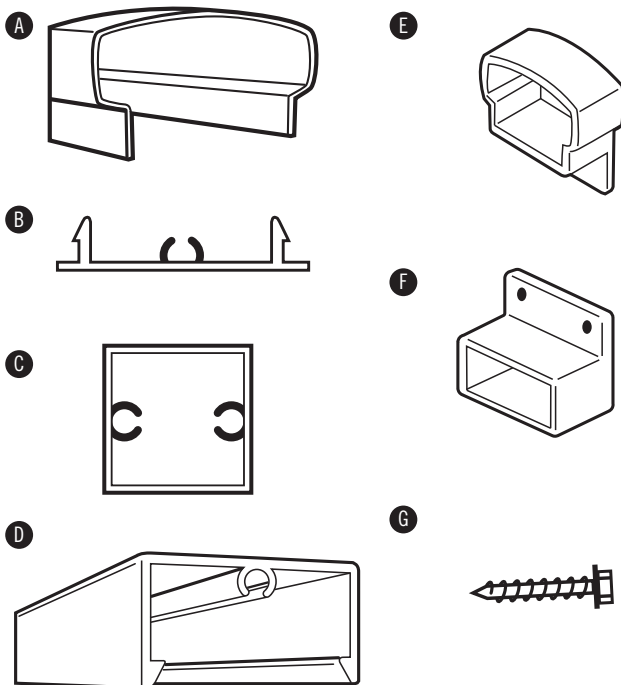
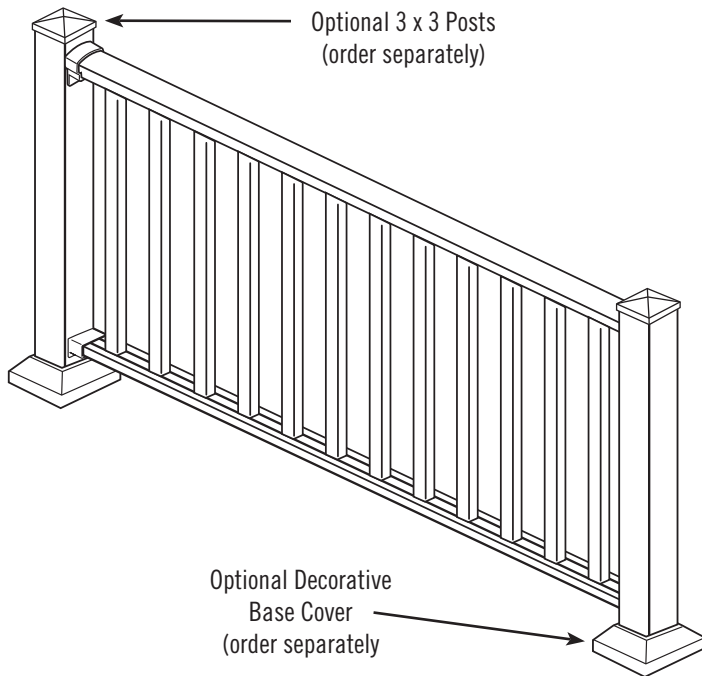
J



# Components and Assembly Instructions

## Components

- A. Top Cap
- B. Top Snap
- C. 1" Sq. Balusters
- D. Bottom Channel
- E. Top Post Mount
- F. Bottom Post Mount
- G. 1 1/2" Fasteners

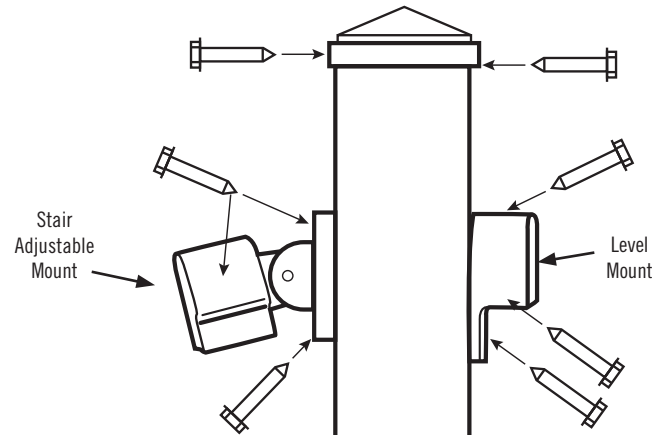


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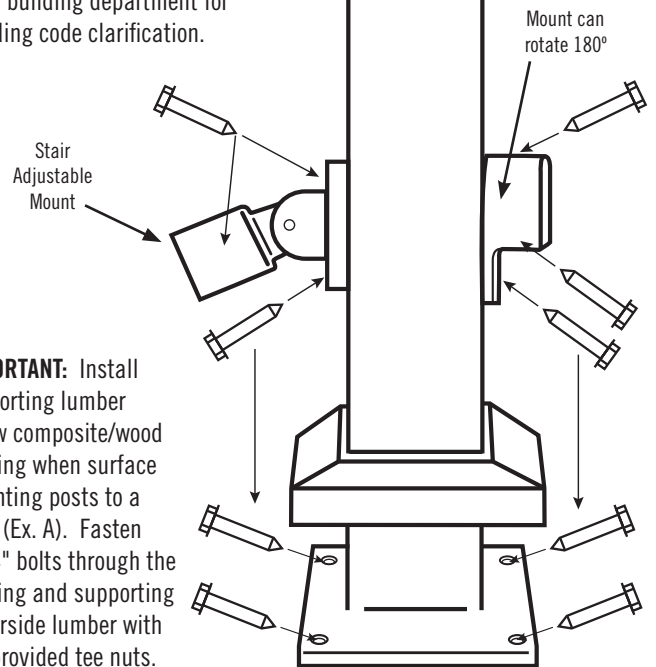
## Post Installation with Welded Base Plate

Start by ensuring that you have a solid and level mounting surface for your post(s). Washers or galvanized/stainless metal shims (not included) may be used to plum posts.

Post Mounts are installed with railing sections in later steps. Mounts shown for informational purpose only in this step.

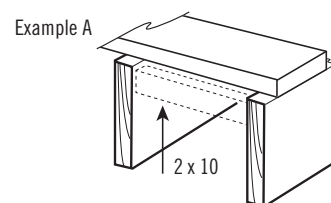


**IMPORTANT:** The distance between posts should not exceed 6 ft. when installed above ground level (24"). Always refer to your local building department for building code clarification.



**IMPORTANT:** Install supporting lumber below composite/wood decking when surface mounting posts to a deck (Ex. A). Fasten the 4" bolts through the decking and supporting underside lumber with the provided tee nuts.

**Note:** When installing the post base into ACQ lumber, use stainless steel bolts (not included)



For assistance call Madden Manufacturing  
573-365-7085

## Post Installation with Separate Mounting Flange

**Note:** When installing “low profile” base covers with the separate mounting flange, the horizontal thru bolts must be installed near the bottom of the mounting flange.

1. Layout posts uniformly or as desired across entire project.
2. Ensure spacing between posts does not exceed 6 ft. for elevated decks (or greater than local codes specify).
3. Starting at a corner post, attach post flange to deck/patio using appropriate fasteners provided with the Post Kit. **MAKE SURE TO USE ADDITIONAL LUMBER BLOCKING UNDER THE DECK TO SECURELY FASTEN THE FLANGE!!!** In some instances, fully threaded lag screws may be necessary – but are not included. **LAG SCREWS LOOSEN OVER TIME AND REQUIRE QUARTERLY SAFETY CHECKS.**

4. Slide 3"x3" post over post flange and plum using level.
5. Drill 1/4" hole (1 1/2" above flange) front-to-back through the entire post and post flange coming out on the back side. **IT IS IMPORTANT TO DRILL HOLES WITH POST PLUM.**

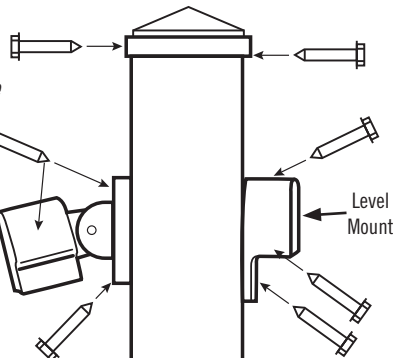
6. Drill 2nd 1/4" hole side-to-side.

Start hole 3/4" above the flange base. Note that hole patterns can be modified if necessary. **Additional screws predrilled into post and flange will firm-up post installation.**

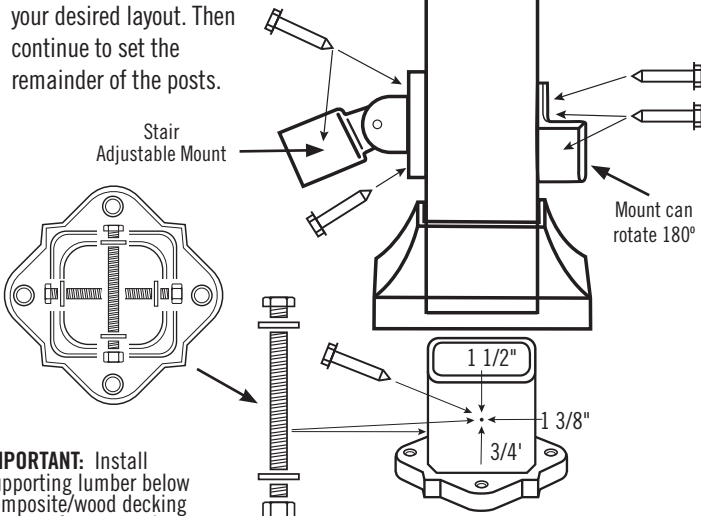
7. Fasten post to post flange with 3 1/2" bolt, washer, and standard nut provided. Washers must be placed on both sides of the post.
8. After post is plum and securely fastened, slide decorative base cover (optional and sold separately) over post covering the post flange.

9. Secure next post using same procedure. At this point you may size (cut) and install a railing section to verify your desired layout. Then continue to set the remainder of the posts.

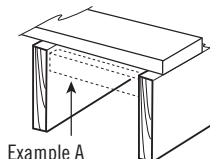
Post Mounts are installed with railing sections in STEP 5. Mounts shown for informational purpose only in this step.



**IMPORTANT:** The distance between posts should not exceed 6 ft. when installed above ground level. Always refer to your local building department for building code clarification.



**IMPORTANT:** Install supporting lumber below composite/wood decking when surface mounting posts to a deck. Fasten the 4" bolts through the decking and supporting underside lumber with the provided tee nuts. We recommend 2" x 10"



**IMPORTANT:** When installing the post base into ACQ lumber, use stainless steel bolts (not included)

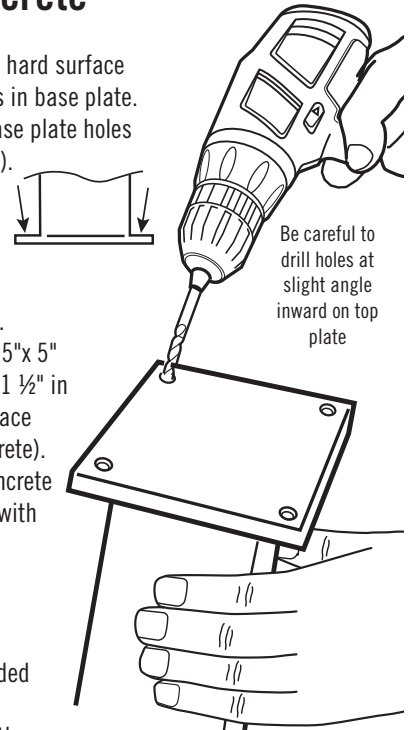
## Installation into wood/composite decking/Non ACQ lumber:

1. Determine the 3"x 3" post location(s). Spacing between posts should be 6" or less to meet IBC codes when installed 24" or higher above the ground.
2. We recommend the edge of the 5"x 5" base plate is fastened at least 1 3/4" in from the edge of the deck (do not lag screw into the rim joist unless absolutely necessary).
3. Reinforce the decking with support lumber “backer board”. A piece of 2"x 10" lumber cut to fit tightly between the joists and installed flat under the decking works great.
4. Square up the post with the deck and mark all (4) holes with a pencil.
5. At your (4) pencil marks, drill a 1/4" hole through the decking and backer board.
6. Using a 7/16" socket bit in your drill, thread the 1/4"x 4" Thru Bolt into the post plate, through the deck, and through the backer board. \*\*
7. Thread the Tee Nut onto the 4" Thru Bolt underneath the decking and support lumber(teeth up).
8. Tighten post firmly to deck, making sure post is plum, using shims if necessary.
9. Slide on optional post base cover for a decorative look.
10. Attach post cap after railing has been installed using 1" fasteners provided, or super glue.

\*\* Note: The 4" Thru Bolt fits very tightly into the post base plate (especially Textured Black Posts due to thicker powder coat finish) and in some cases must be predrilled using a 1/4" drill bit.

## Installation into concrete

1. Turn the post upside down on a hard surface and prepare to drill larger holes in base plate. Enlarge the (4) existing post base plate holes to 5/16" (using a 5/16" drill bit).
2. Determine the 3"x 3" post location(s). Spacing between posts should be 6' or less to meet IBC codes when installed 24" or higher above the ground.
3. We recommend the edge of the 5"x 5" base plate is fastened at least 1 1/2" in from the edge of any concrete face (assuming normal weight concrete).
4. Square up the post with the concrete surface and mark all (4) holes with a marker.
5. At your (4) marks, drill a 1/4" masonry bit to 3 1/2" or deeper hole into the concrete.
6. Fasten post in place with provided 1/4" x 3" Powers Wedge Bolts
7. Begin tightening the anchor with socket wrench or impact wrench by rotating clockwise and applying pressure in toward the concrete (make sure it is plumb).
8. Continue tightening the anchor until the head is firmly seated against the post base plate. (Do not over tighten).
9. Slide on optional post base cover to hide fasteners. Attach post cap after railing has been installed using 1" fasteners provided, or use super glue.



**For assistance call Madden Manufacturing  
573-365-7085**

## Pre Sizing and Cutting Top and Bottom Rails (prior to assembly)

There are two methods used when cutting the top and bottom rails to size. It is important to cut appropriate amounts from each end of the rails so the picket spacing from the post/wall appears symmetrical.

1. Measure the distance between your posts from the inside edge of the post to the inside edge of the other post. Measure at the top and then at the bottom, if the measurements are different, your posts may not be level and may need to be shimmed.
2. Divide the distance between posts by two ( $\div 2$ ) to find the center of the railing.

### Option A – Measure from the “center gap”:

A) Find the center “gap” (space between picket holes) of the top snap (B), Make a pencil mark exactly in the middle of this gap (2-3/8" from either pair of holes). Measure from the pencil mark the distance from #2 above. Make another pencil mark 1/8" short of that (allows railing to fit between posts when installing the completed section), repeat at the other end.

### Option B - Measure from “center baluster”

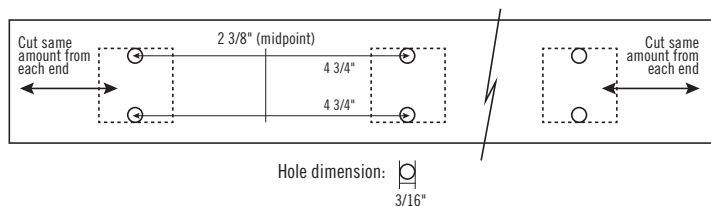
B) Choose one of the two sets of holes on either side of your pencil mark and do the same as in Option A except starting from the center hole instead of center of the gap.

### Option C - Lay in front of installed post

Visually center rail between posts

3. Place your marked piece between the two posts and make sure there is not more than a 1/4" gap (1/8" for either side). When satisfied, make your cuts.
4. Place **top snap (B)** on **bottom channel (D)** with flat portions together. Drop a screw through a hole to line up pieces. Cut bottom channel (D) to equal length using the top snap (B) as a template.  
**MAKE SURE THE HOLES ARE ALIGNED!!**
5. Cut Top Cap (A) to same length as top snap and bottom channel.

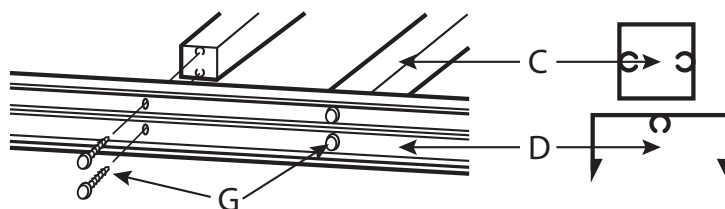
## Picket Fastener Spacing Diagram



## Railing Assembly and Installation

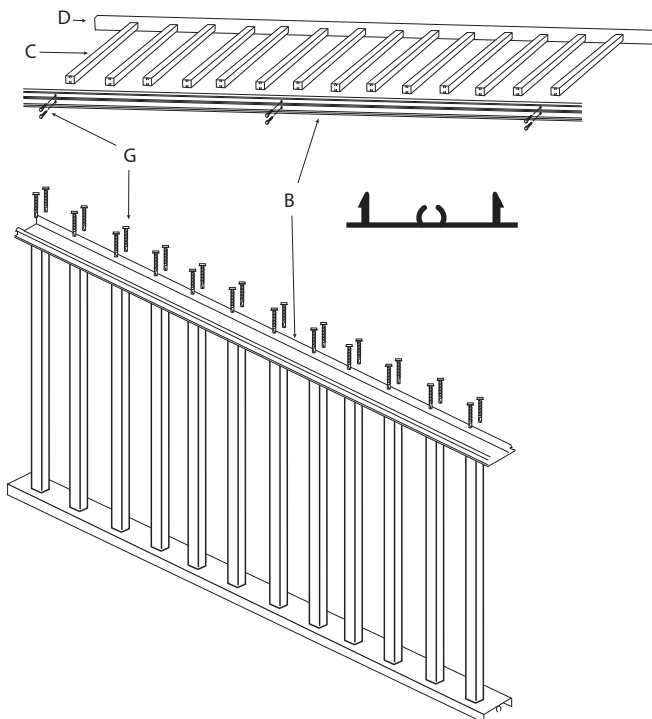
### STEP 1:

1. Place predrilled **bottom channel (D)** on its side using non-abrasive work surface. Protect the painted surface from scratching.
2. Position one **picket (C)** above bottom channel aligning the predrilled holes. Place baluster on flat side of channel.
3. Start both 1 1/2" **fasteners (G)** thru bottom channel halfway into baluster, and then tighten fasteners down fully. **Tighten fasteners until flush – DO NOT OVER TIGHTEN.**
4. Repeat these steps until all balusters are secured.



### STEP 2:

1. Place predrilled **top snap (B)** on the opposing flat side of balusters.
2. Loosely fasten top snap to the first and the last picket making sure the predrilled holes are aligned correctly. Next, loosely fasten a picket near the center. **Make sure not to tighten until all pickets are in place.**
3. Once the top snap is **loosely fastened** to all pickets, stand the upright and secure all pickets – **Tighten fasteners until flush – DO NOT OVER TIGHTEN.**

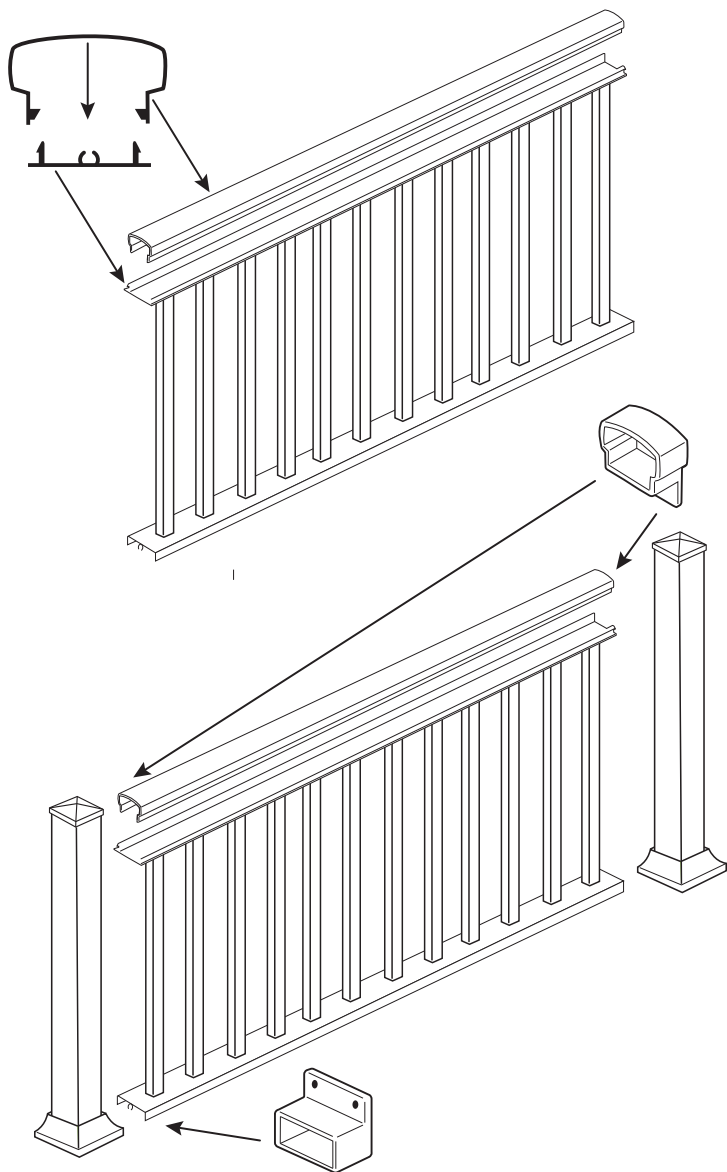


### STEP 3:

1. Align the **top cap (A)** with your top snap making sure one end is flush. Starting at one end, squeeze the top cap and top snap (B) together until it pops in place. Continue snapping down the top cap until reaching the end of your railing.
2. Slide the **top post mounts (E)** and **bottom post mounts (F)** over the ends of your railing (4 mounts total).
3. Place assembled railing section between posts. If the handrail section need to be shortened, **CUT EQUAL LENGTHS FROM BOTH ENDS OF THE RAILING**. Example: If the railing is 3" too long, cut 1 1/2" from each end.

### STEP 3B

**IS ONLY NECESSARY WITH 8 FT RAILING SECTIONS**  
(MID SUPPORT NOT INCLUDED WITH 6 FT RAILINGS)

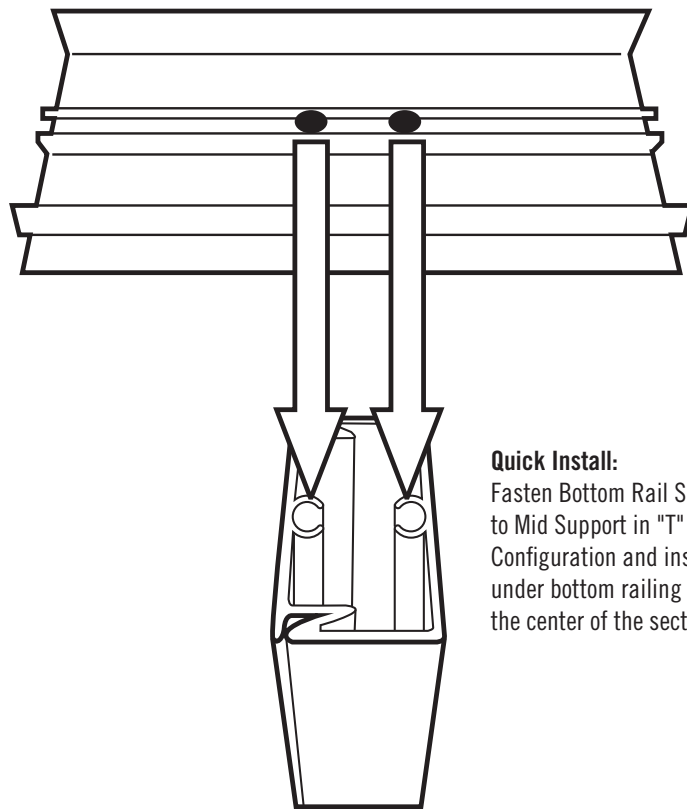


## MID SUPPORT STABILIZER

**(INSTALLATION IS OPTIONAL for section under 8')**

Note: Assemble with 1 1/2" fasteners included with pickets.

1. Pre-drill pilot holes to attach Bottom Rail Snap on the top of the Mid Support creating a "T" configuration as shown.
2. Fasten Bottom Rail Snap to Mid Support using 1 1/2" picket fasteners.
3. Once your railing is installed, place Mid Support at center of rail. If necessary, measure from ground to bottom rail and cut the Mid Support proper height.
4. Snap the horizontal section of the Mid Support to the bottom rail of your railing section. Note: Upward pressure must be applied to your railing section in order to slide and snap the Mid Support Stabilizer in place.



**Quick Install:**  
Fasten Bottom Rail Snap to Mid Support in "T" Configuration and install under bottom railing at the center of the section

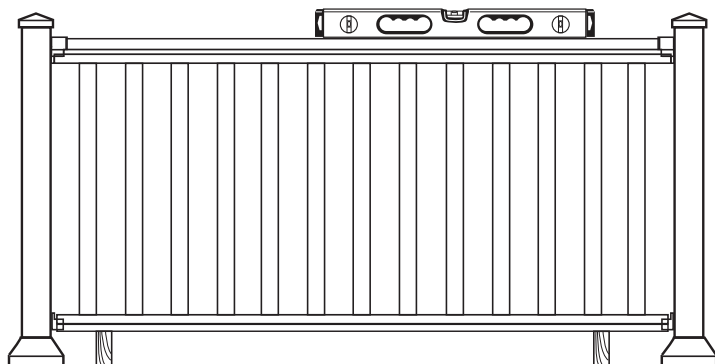


#### STEP 4:

Hint: Place railing section on edge of 2x4 lumber to fasten bottom post mounts.

1. Ensuring the gap from the top of the deck (ground) to the bottom of the **bottom channel (D)** is less than 4", and that the top of the rail meets your code requirements, vertically center your railing. Now attach the **bottom post mounts (F)** to the existing or post using the proper fasteners (C) provided. Reminder: Typically residential minimum handrail height is 36" and commercial handrail height is 42".
2. Ensuring your railing is centered vertically on the post, fasten the **top post mount (E)** using the proper fasteners provided.
3. Now move to the other end of the railing section. Using a level (or resting railing on edge of 2 x 4 lumber) confirm your railing section is positioned at the correct height. Vertically center on post and fasten the **2nd bottom post mount** using the proper fasteners provided.
4. Vertically center the top rail to the post and fasten the **2nd top post mount** using the proper fasteners provided.
5. **Fasten the top post mounts (E) to the top (A) on non-visible side of railing.** PILOT HOLE MUST BE DRILLED! Use the 1" self tapping fasteners provided. Repeat steps for bottom rail mounts (F).

**Note:** Refer to Post Installation Page near beginning of instructions for proper post installation



**You have completed your level railing Installation.**  
Stairs and gate instructions follow.

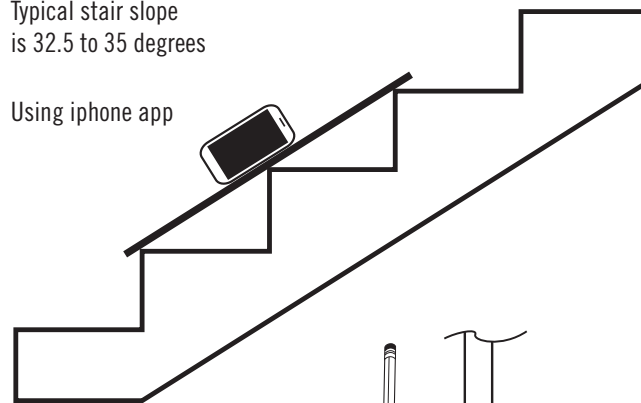
## Stair Railing Assembly and Installation

#### STEP 1: STAIRS

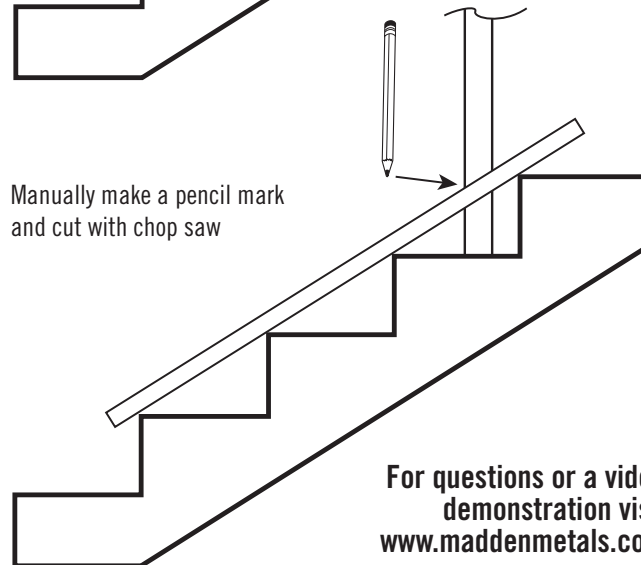
1. Review the instructions and make yourself familiar with the included items.
2. Measure the stair rise and run then determine the angle using the **rise/run chart** on the following page. We also recommend verifying your angle using an angle finder app on your Android or iPhone — see recommendations on the following page. Make sure to measure the angle at the top, middle and bottom of stair run!
3. Set your miter box/chop saw to the appropriate stair slope angle and cut each end of the picket (B) (baluster). **MAKE SURE YOU CUT BOTH ENDS PARALLEL TO ONE ANOTHER SO TOP AND BOTTOM RAILS ATTACH PROPERLY. ALSO ALIGN THE SCREW CHANNELS!!!**
4. Visually verify the picket angle is correct by setting between top and bottom rails and holding in place on stair slope. Carefully cut the remainder of the pickets **EXACTLY THE SAME SIZE!**
5. After all the pickets are cut fasten them to the bottom channel (A) using the 1 1/2" fasteners provided in your railing kit. (Note: if the stair slope is steep, the 1" fasteners included with the Pivot Mount Kit (sold separately) may install easier. Be sure to use the same fasteners at the top and bottom of the pickets).
6. Straighten the pickets by hand and fasten the top snap (D) to the top of the pickets.
7. Slide the Top and Bottom Pivot Mounts onto the ends of each rail. Set the railing section in place.
8. Position railing at proper height and mark or pilot holes in posts.
9. Attach pivot mounts to posts with railing section in proper position
10. After railing is securely in place pilot and secure fastener through pivot mount into top rail on non visible side of railing. Repeat for bottom rail.

Typical stair slope  
is 32.5 to 35 degrees

Using iphone app



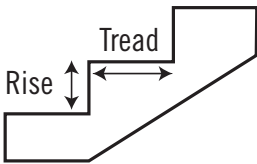
Manually make a pencil mark  
and cut with chop saw



**For questions or a video  
demonstration visit  
[www.maddenmetals.com](http://www.maddenmetals.com)**

# Stair Railing Helpful Hints & Apps

RISE	RUN (TREAD LENGTH)								
	10"	10.5"	11"	11.5"	12"	12.5"	13"	13.5"	14"
5"	27°	25°	24°	23°	23°	22°	21°	20°	20°
5.25"	28°	27°	26°	25°	24°	23°	22°	21°	21°
5.5"	29°	28°	27°	26°	25°	24°	23°	22°	21°
5.75"	30°	29°	28°	27°	26°	25°	24°	23°	22°
6"	31°	30°	29°	28°	27°	26°	25°	24°	23°
6.25"	32°	31°	30°	29°	28°	27°	26°	25°	24°
6.5"	33°	31°	30°	29°	28°	27°	27°	26°	25°
6.75"	34°	33°	32°	30°	29°	28°	27°	27°	26°
7"	35°	34°	32°	31°	30°	29°	28°	27°	27°
7.25"	36°	35°	33°	32°	31°	30°	29°	28°	27°
7.5"	37°	36°	34°	33°	32°	31°	30°	29°	28°
7.75"	38°	36°	35°	34°	33°	32°	31°	30°	29°

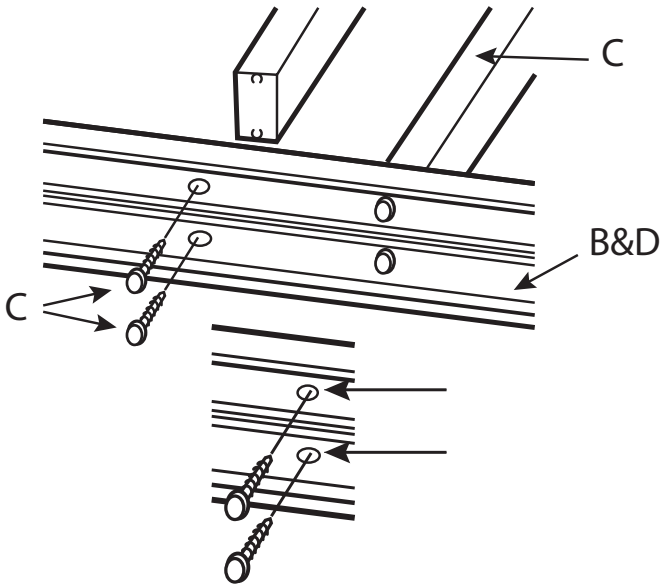


Tip#2: Smartphones and tablets have good (free) angle finder apps

Tip#3: Elongating (enlarging) the picket fastener holes on top and bottom rails makes assembly easier

Stair runs may require elongated (enlarged) holes and/or shorter fasteners to secure pickets efficiently (shorter 1" fasteners are included with the EZ Pivot Mount Kits).

To elongate holes, use a 13/64" drill bit in an up and down motion within the existing hole and parallel with the rail. **IMPORTANT:** elongate the hole towards the point (tip) of the mitered picket to avoid any visible modifications. Do not widen the holes side to side.



# Gate Instructions

EZ Gates can swing left or right depending on the hinge location. Standard hinges and gravity latch are included with all EZ Gates.

**Note:** Self closing hinges and pool child safety latch sold separately.

- Step 1**
1. Verify rough opening between posts is 1" greater than width of gate.
  2. Set gate in opening and visually identify where hinges will attach to gate for the desired swing direction.
  3. Measure 3" down from the very top of gate and attach hinge to appropriate gate face using the provided fasteners.
  4. Attach 2nd hinge 3" above the very bottom of the gate to the appropriate gate face.
  5. Measure 4" down from the very top of gate and attach **gate latch arm** to appropriate gate face using the provided fasteners.
  6. Place (2) 2x4s on edge in the gate opening so the gate may rest in place while attaching the hinges to the post.
  7. Level gate in position and fasten top hinge to appropriate post face **with a single fastener only.**
  8. Confirm levelness and attach bottom hinge to post using **all three fasteners**
  9. Complete installation of top hinge with remain two fasteners and remove 2x4's.

Hold gate latch on latch arm, swing gate closed, mark holes and fasten latch to post.

Available gate sizes:	Typical railing Heights:
Residential: 36"W x 36"H	Residential: 36"
Commercial: 36"W x 42"H	Commercial: 42"
Pool Gate: 36"W x 48"H	Pool Fencing: 48"-54" (check local codes)

## Optional gate handrail

- Self closing hinges
- Child safety pool latch

