

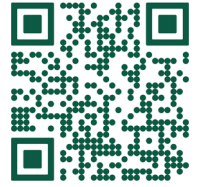
ORDER OF INSTALLATION:

1. Set Posts
2. **Attach Handrail**
3. Install Cables

SETUP GUIDE

STAINLESS STEEL HANDRAIL

SKU #HRS-1.25-93-316



SCAN THE CODE
for a video tutorial

TOOLS

- ❑ 3/8" drill bit
- ❑ 5/32" drill bit*
- ❑ 1/8" drill bit
- ❑ 3/16" Allen wrench*
- ❑ T20 star drive bit**
- ❑ 5/32" driver or Allen wrench*
- ❑ 1/8" driver or Allen wrench*
- ❑ 10-24 National Course tapered tap*
- ❑ T-Handle tap wrench*
- ❑ Handrail Clamps for Intermediate Posts**
- ❑ Quick clamps
- ❑ Miter bandsaw
- ❑ Power drill
- ❑ Tape measure
- ❑ Speed square
- ❑ Angle finder
- ❑ File
- ❑ Fine-point pencil
- ❑ Spring-loaded center punch (optional)

SUPPLIES

- ❑ Venture Series Handrail Mounting Screws**
- ❑ 2-1/2" deck screws
- ❑ Splines (stainless steel and delrin structural splines, corner splines, spline stock)**
- ❑ High-tack painter's tape
- ❑ Machine oil (optional)
- ❑ Canned air (optional)
- ❑ Silicone sealant (optional)**

*included in installation kit

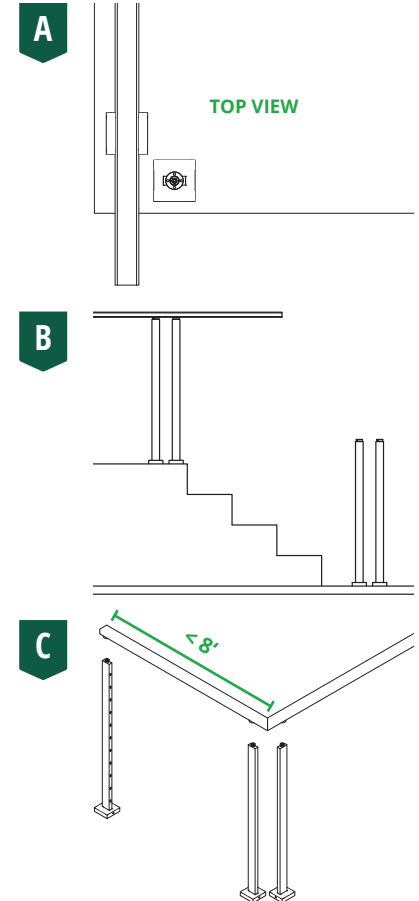
**available at cablebullet.com



INSTALLATION OVERVIEW

READ BEFORE STARTING INSTALLATION

- 1 Ensure that all posts are set plumb and adhere to our post spacing guidelines (found in Venture Series Post Setup Guide).
- 2 Start at one end and work your way along the run one connection (see page 2) at a time.
- 3 When your railing transitions to either a corner (A) or vertical (B) transition, run your handrail past the last level post, do not drive in any screws or set screws, and proceed to the appropriate connection section for your transition. You will have to remove this section in order to continue, so there is no need to secure it yet.
- 4 Certain sections may require multiple connections within a short span (under eight feet) and may need to be assembled as a unit before securing to posts (C). This could be a short run with a corner or a stair transition. Assemble the whole unit and secure it to your posts all at one time. This will help you avoid removing anchoring screws in order to attach the end post tops.
- 5 When your entire railing is assembled, check all posts for secure handrail connections.



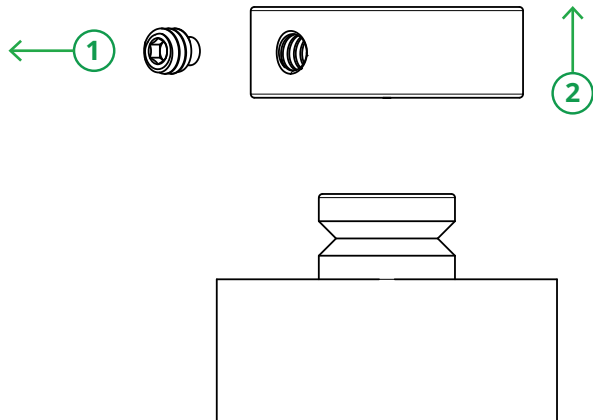
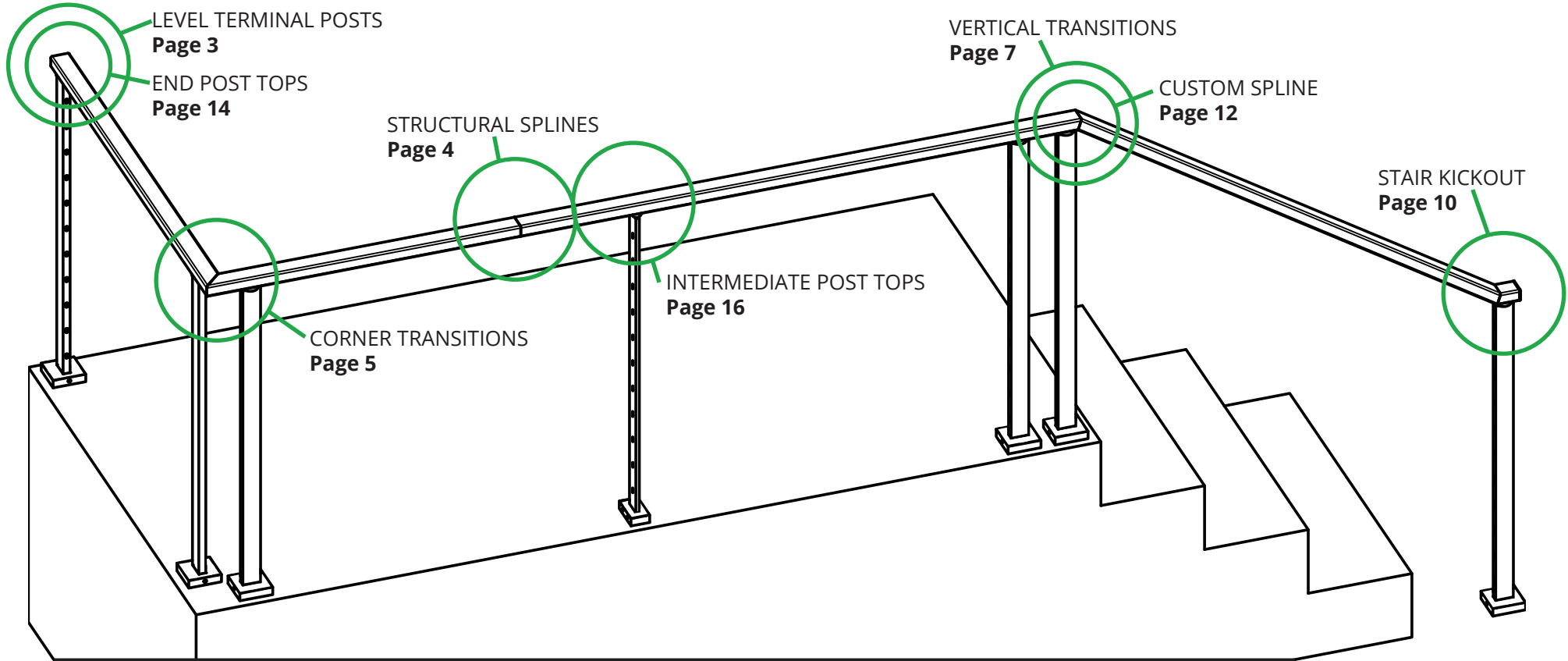
..... GOT QUESTIONS? WE'RE HERE TO HELP!

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CONNECTIONS INDEX



HOW TO REMOVE MODERN TOP COLLAR:

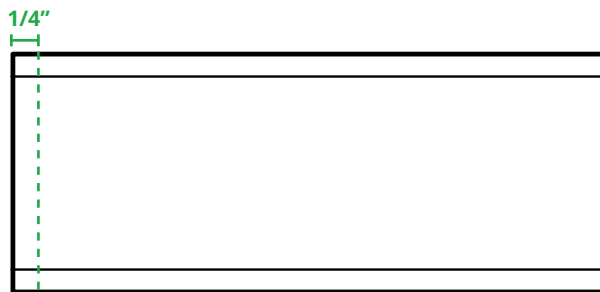
- 1 Loosen the set screw with a 1/8" bit or Allen wrench.
- 2 Lift the outer collar from the center pin.

PRO TIP: Use only high quality drill bits (Cobalt for best results). When drilling through stainless steel, use firm, constant pressure. Excessive speed without appropriate pressure creates additional heat, which dulls bits faster and hardens steel making it extremely difficult to drill through. If needed, cool down steel with water or lubricant to reduce friction. Additional drill bits may be required.

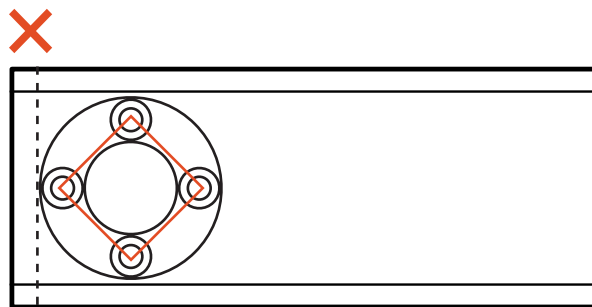
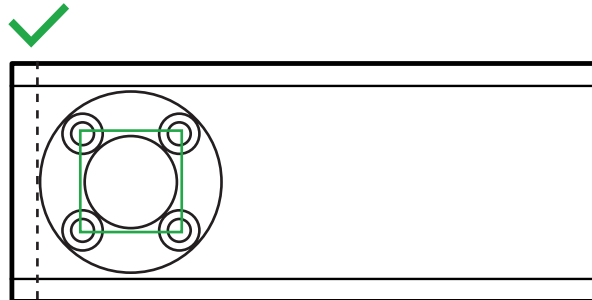
CONNECTIONS

LEVEL TERMINAL POSTS

Connect your handrail to your first post on a level run.

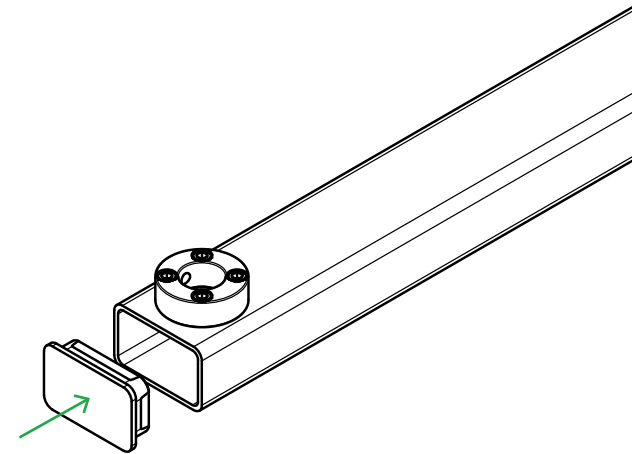


1 Measure 1/4" from the end of a length of handrail and mark with a fine-point pencil.




2 Lay your outer collar upside-down on your handrail inside this line. Position the screw holes in a square formation rather than a diamond so as not to interfere with your end cap.

3 Continue to **End Post Tops** instructions on **page 14**.

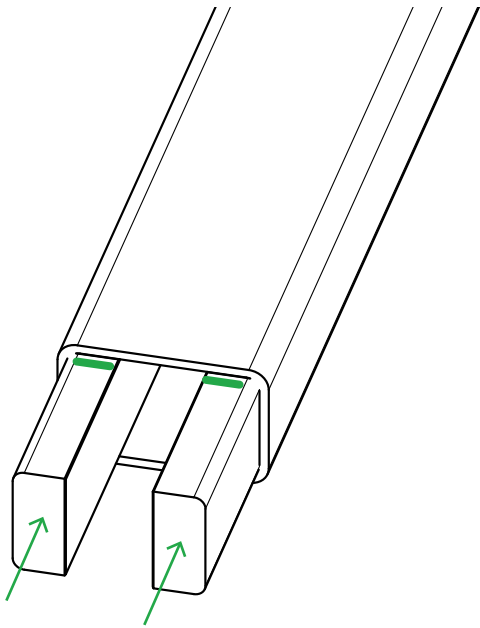


4 Slide in your end cap.

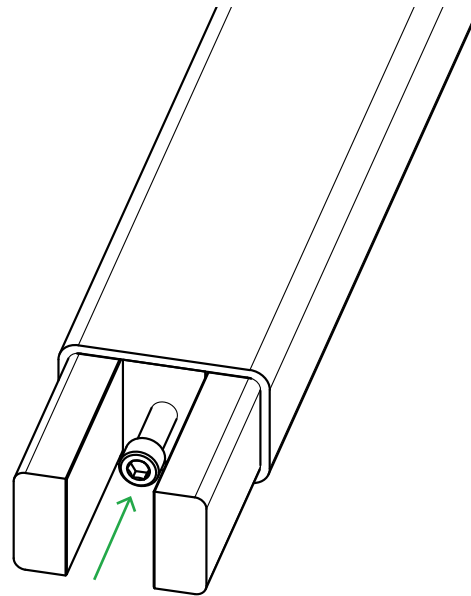
PRO TIP: If you find that your end cap has a loose fit, apply a thin bead of clear, exterior grade silicone caulk or sealant to both long, interior sides of the end cap before inserting. Wipe away any excess caulk and use painter's tape to ensure the cap stays in place until dry. 

STRUCTURAL SPLINES

Use Structural Splines to connect two lengths of handrail on a continuous run.

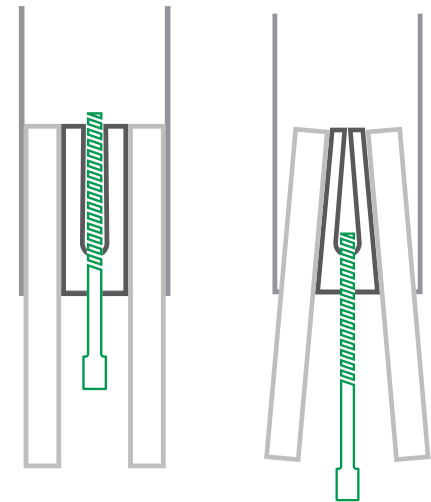


1 At the end of a length of handrail, insert two stainless steel spline pieces into the handrail. Slide them in until the notches are even with the end of the handrail.



2 Insert a delrin wedge between the stainless pieces with the screw head accessible. Slide the delrin in until it is flush with the edge of the handrail.

TOP VIEW



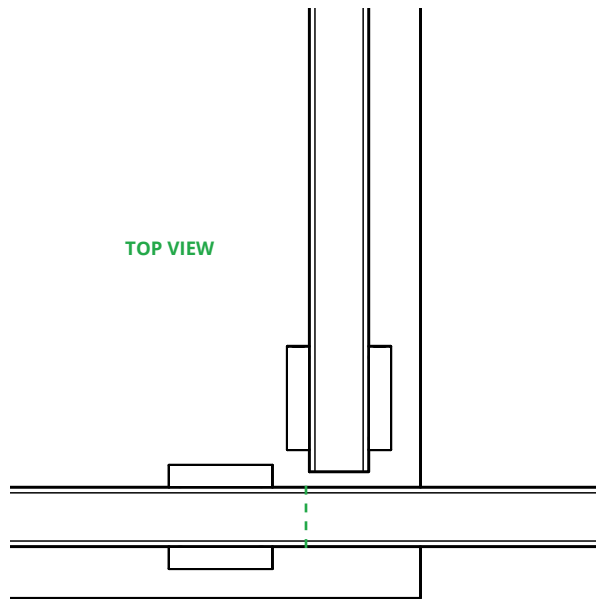
EXAGGERATED FOR DEMONSTRATION PURPOSES

3 To tighten the spline, adjust the screw using a 3/16" Allen wrench. The further in the screw is set the looser your outer connection will be. If the connection to your second piece of handrail needs to be more snug, reverse the screw out as necessary.

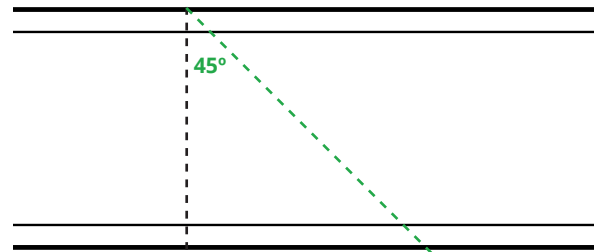
4 After installing a structural spline, go back and secure all previous sections using the instructions for **End Post Tops** and **Intermediate Post Tops** found on **pages 14 and 16**.

CORNER TRANSITIONS

Turn your handrail at a right-angle corner using a corner spline.

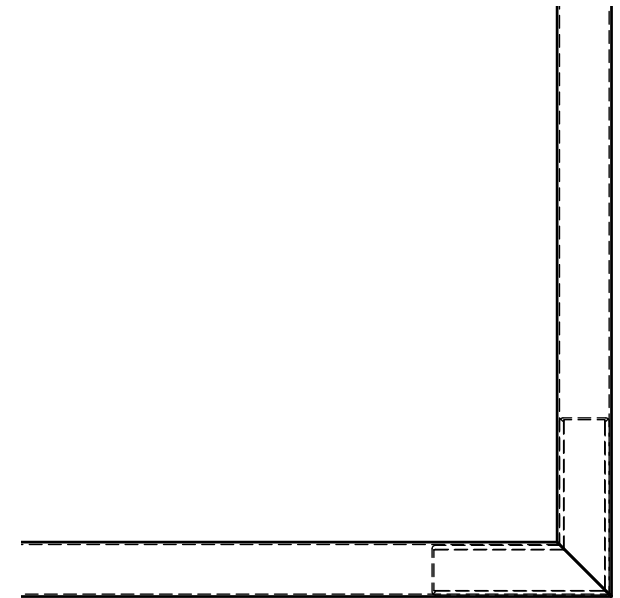


1 With the last handrail length in place but unsecured, find and mark the location of your corner by laying another length of handrail on your adjacent run. Make sure this piece is centered on the post tops and that it comes up just short of the intersection. Using a speed square, find and mark the place on the inside of the corner where the two pieces of handrail would overlap.



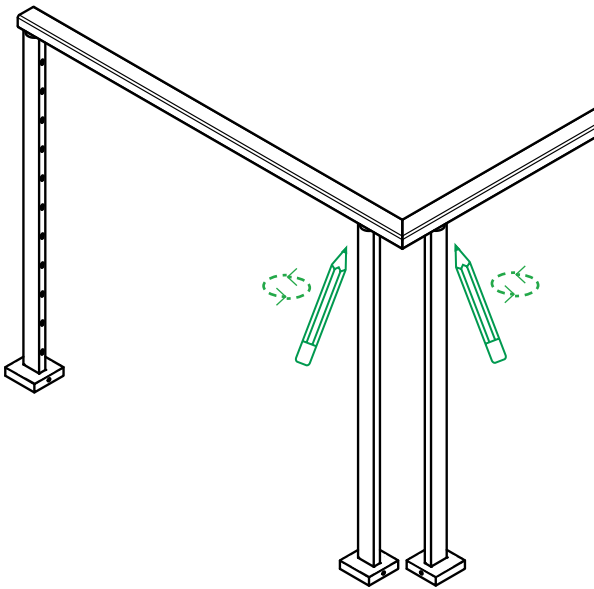
2 Based on this mark, use the speed square to draw a 45° angle for your miter cut.

3 Using a miter bandsaw, cut your handrail along this mark. File down any burrs.

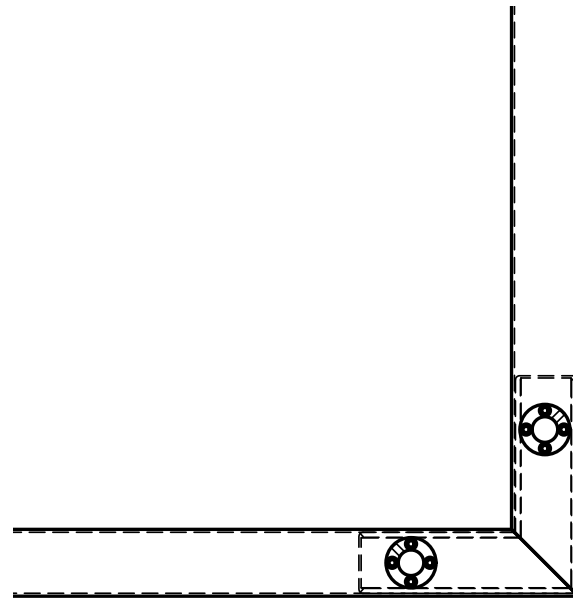


4 To complete your corner, flip the off-cut piece of handrail over and fit to the original piece using a corner spline. If your off-cut piece is shorter than one foot, cut a fresh length of handrail at a 45° angle to complete the corner.

CORNER TRANSITIONS



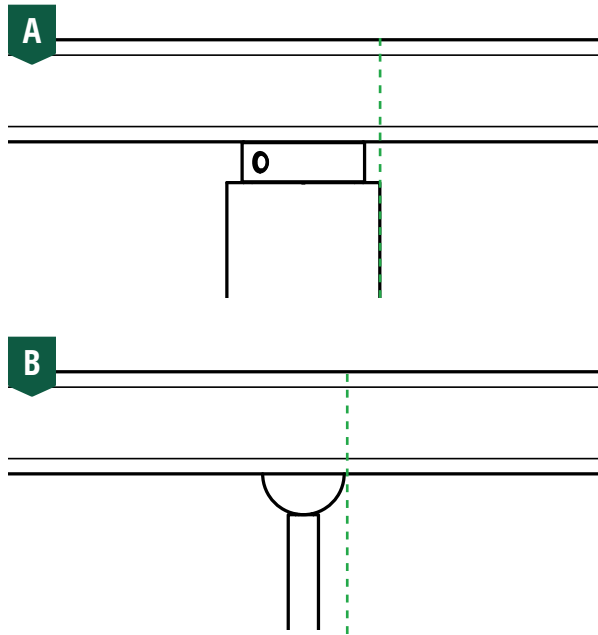
5 Place your assembled corner onto your posts making sure to fit with any previous joints or post tops. Mark the location of both corner outer collars by tracing around them with a fine-point pencil.



6 Remove your handrail and place it upside-down on your drilling surface. Attach both post tops through the corner spline using the **End Post Tops** instructions on **page 14**. Make sure to drill your pilot holes deep enough into the spline to clear the 3/4" screws.

VERTICAL TRANSITIONS

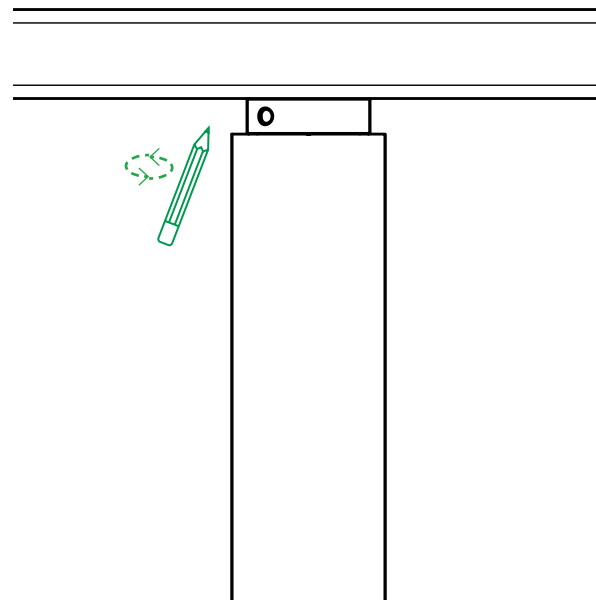
Transition your handrail up or down a set of stairs.



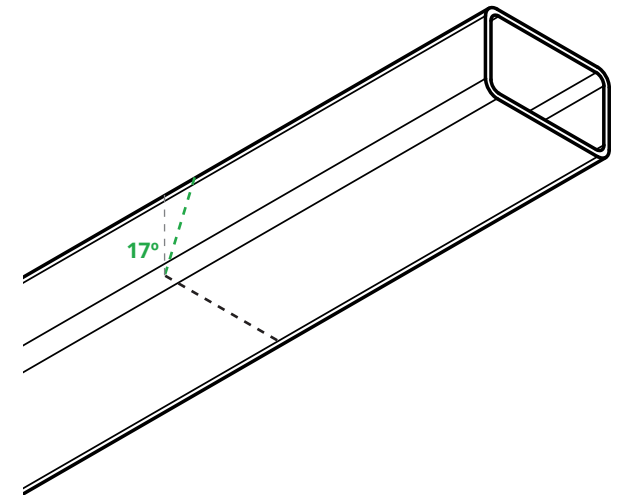
1 With the level handrail length in place but unsecured, find and mark the location of the bevel cut using a fine point pencil.

For an end post A: make the underside of your bevel cut parallel with the cable inflection point (the face of the post.)

For an intermediate post B: make your bevel cut at the outside edge of your post top.



2 If your stairs begin with an end post, mark the location of the outer collar by tracing around it with a fine point pencil.

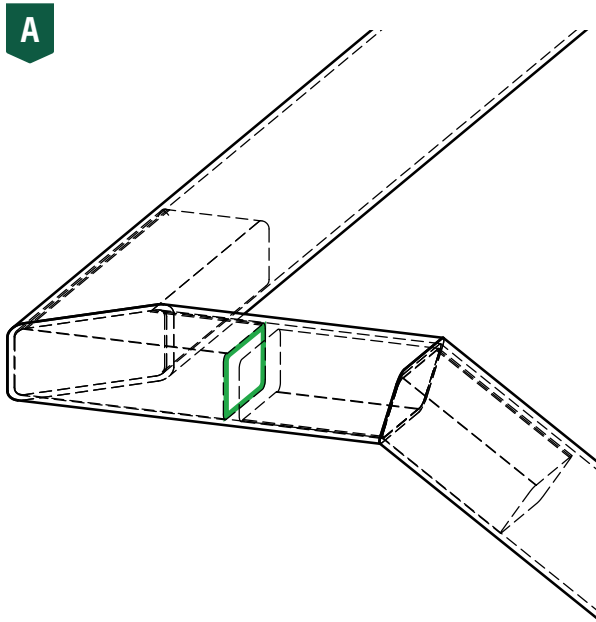


MEASUREMENTS ARE FOR EXAMPLE PURPOSES ONLY

3 Determine the pitch of your stairs using an angle finder. Divide that number in half; this will be the angle of your bevel cut. Mark this angle on your handrail.

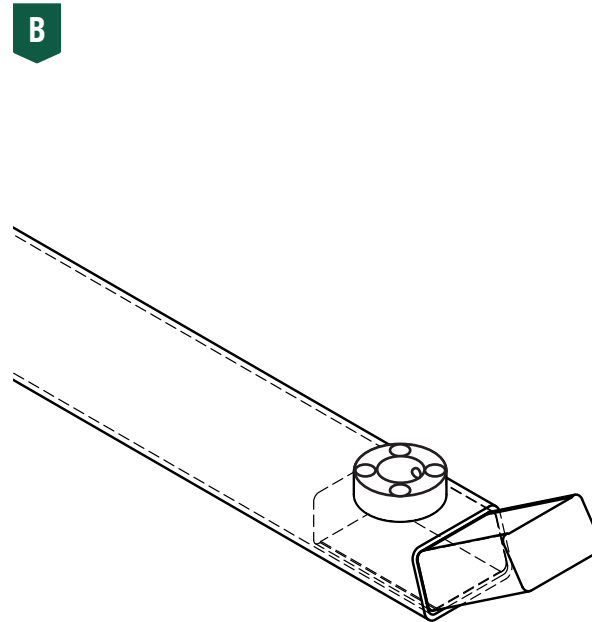
4 Remove the handrail section from the posts and make your bevel cut following your angled mark using a miter bandsaw. File down any burrs as necessary.

VERTICAL TRANSITIONS



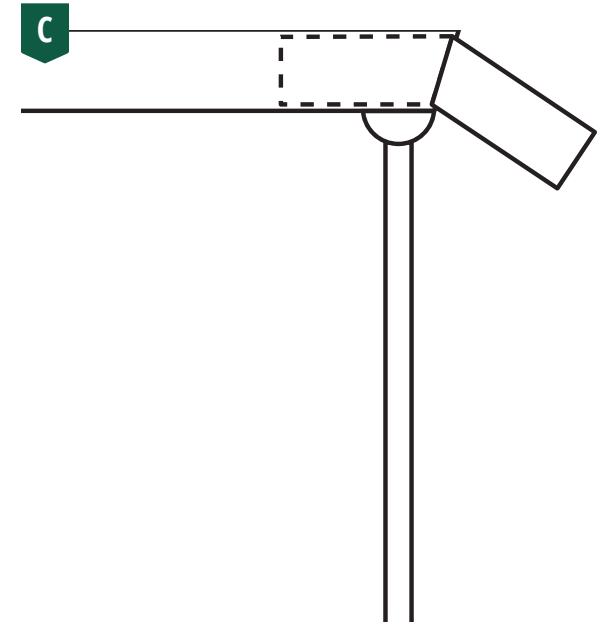
5 Use spline stock to create a **custom spline** matching the angle of your stairs. See **page 12**.

If your stair transition is immediately after a corner **A**, cut your corner spline short to accommodate the length of the custom spline.



6 **For an end post B:** position your handrail upside down on your drilling surface, slide in your custom spline, and attach your post top through the spline using **End Post Tops** instructions on **page 14**. Make sure to drill your pilot holes deep enough to clear the 3/4" screws. Replace this segment of your stair handrail back on your posts and secure in place by tightening the set screw in the outer collar.

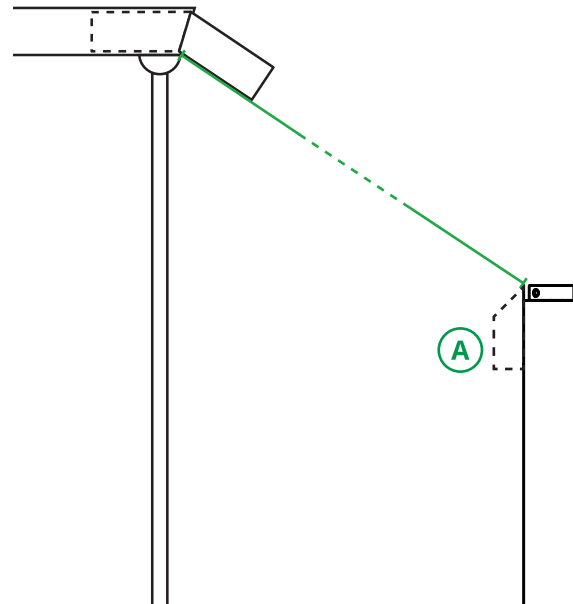
For an Intermediate post C: use clamps to prevent your post from shifting from side to side or away from the drill. Slide in your custom spline and follow **Intermediate Post Tops** instructions on **page 16** to drill, tap and secure handrail to the post through the spline. Make sure to drill your pilot holes deep enough to clear the 3/4" screws.




VERTICAL TRANSITIONS

7 If the off-cut piece of handrail from your first stair bevel cut is at least one foot long, flip it over to continue your handrail run. Alternatively, cut a fresh length of handrail at a matching angle to continue. You may need to spline two lengths of handrail together using a **Structural Spline (page 4)** in order to reach the end of your stair run.

Attach to any intermediate posts as you go using the **Intermediate Post Tops** instructions found on **page 16**.



8 Find the finished length of your stair rail by measuring from the top inflection (or the face of the structural joint if using more than one length of handrail) to the bottom inflection point. Make your second bevel cut at this length on the appropriate piece of handrail using the same angle as your first bevel cut. Make a matching **Custom Spline (page 12)** as well.

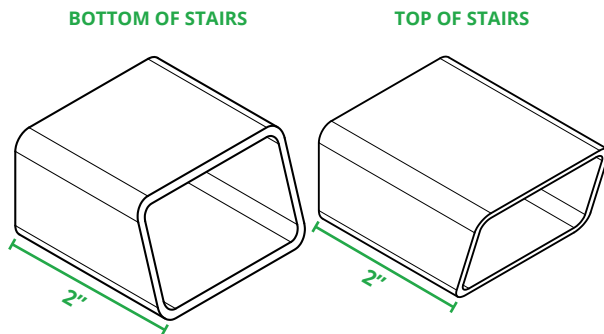
PRO TIP: Cut a piece of scrap wood (A) at a 45° angle and clamp it flush with the inflection point and level with the post top to create a precise point to measure from. 

9 If your stairs end your run, construct a **Stair Kickout** by following the instructions on **page 10**.

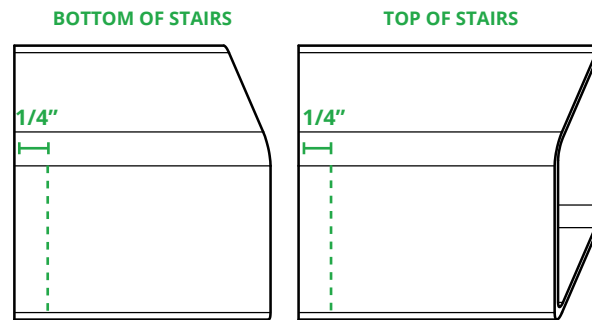
10 Assemble the entire stair run and secure it by drilling, tapping, and driving in remaining intermediate screws and by re-tightening end post set screws.

STAIR KICKOUT

Stair kickouts will end your handrail over the final end post of a stair run where the handrail does not continue into a level run. This can occur at either the top or bottom of the stairs depending on your project.

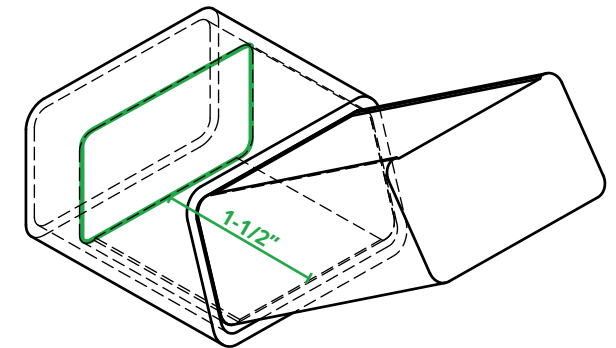


1 Cut a 2" piece of handrail with a bevel cut on one side matching the angle of the other bevel cuts used on this stair run.



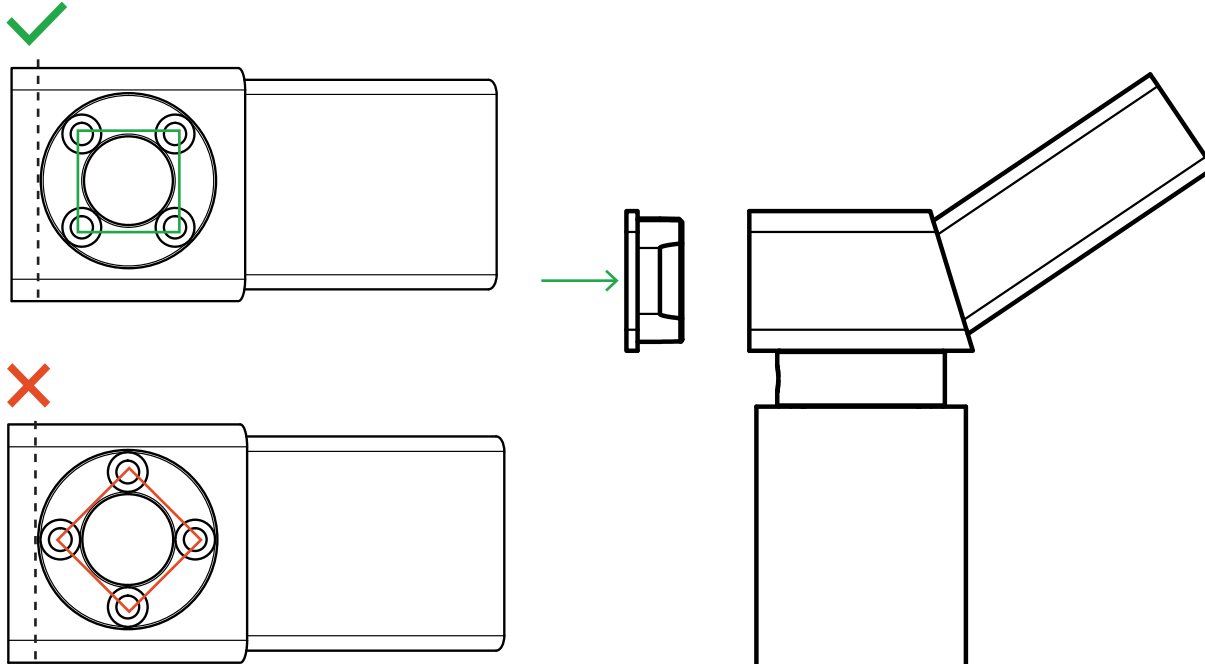
2 On the underside of the handrail piece, measure 1/4" from the flat end and mark with a fine-point pencil.

ALL PROCEEDING STAIR KICKOUT ILLUSTRATION SHOW
BOTTOM OF STAIR CONFIGURATIONS



3 To accommodate your end cap, cut your custom spline so that one half measures 1-1/2" from the inflection point to the end. *You will be cutting through the screws that hold the spline together.* Slide the short end of your spline into your handrail section.


STAIR KICKOUT



4 Lay your outer collar upside-down on your handrail inside this line. Position the screw holes in a square formation rather than a diamond so as not to interfere with your end cap.

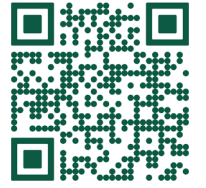
5 Continue to **End Post Tops** instructions on **page 14**.

6 Slide in your end cap.

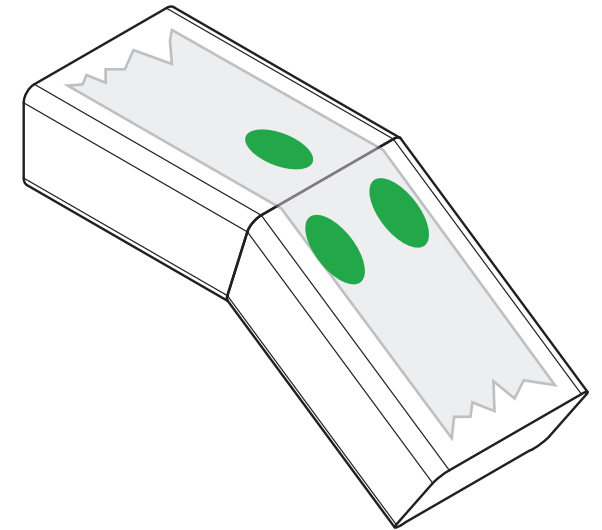
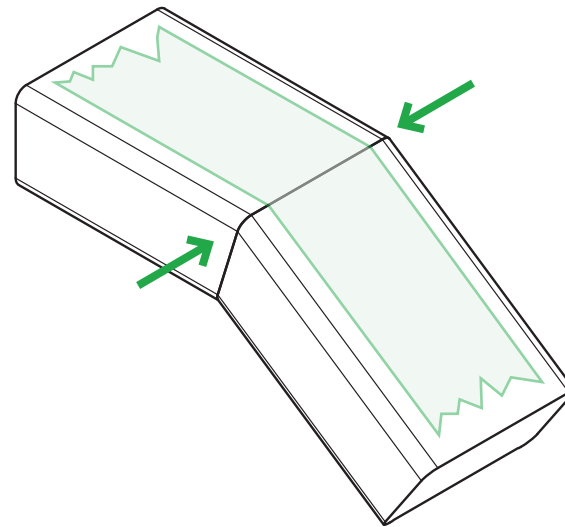
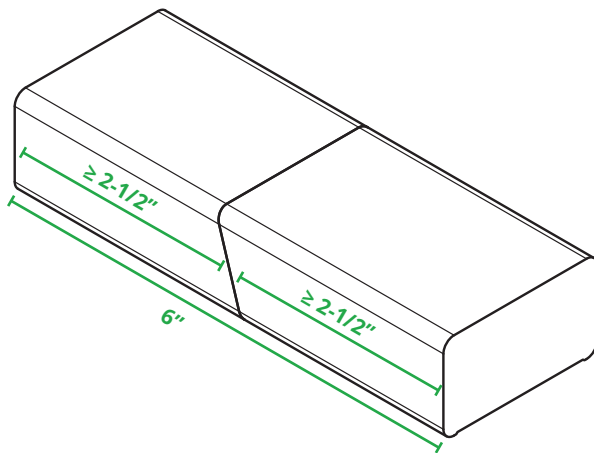
PRO TIP: If you find that your end cap has a loose fit, apply a thin bead of clear, exterior grade silicone caulk or sealant to both long, interior sides of the end cap before inserting. Wipe away any excess caulk and use painter's tape to ensure the cap stays in place until dry. 

CUSTOM SPLINES

Build Custom Splines to connect your handrail at vertical transitions.




SCAN THE CODE
for a video tutorial



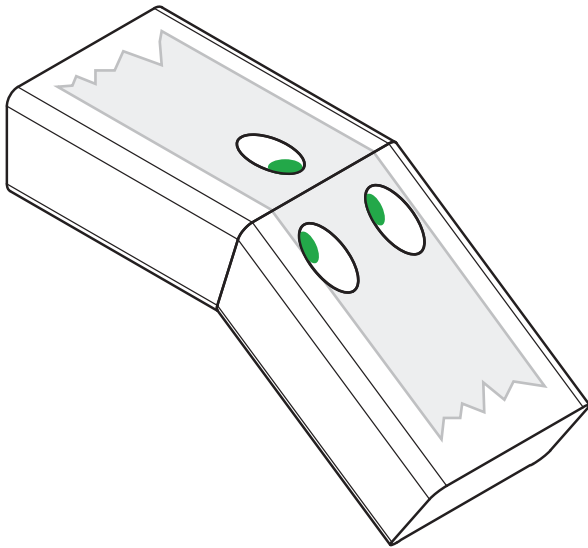
1 Make a bevel cut in the middle of a 6" piece on spline stock to match the bevel cut of your stair run (found in step 3 of **vertical transitions**). Make sure there is at least 2-1/2" of material on both halves to accommodate 2-1/2" screws.

2 Flip over one of the halves and secure the two pieces together tightly using high-tack tape on the top and the bottom. Clamp the seam to keep the pieces from sliding side-to-side.

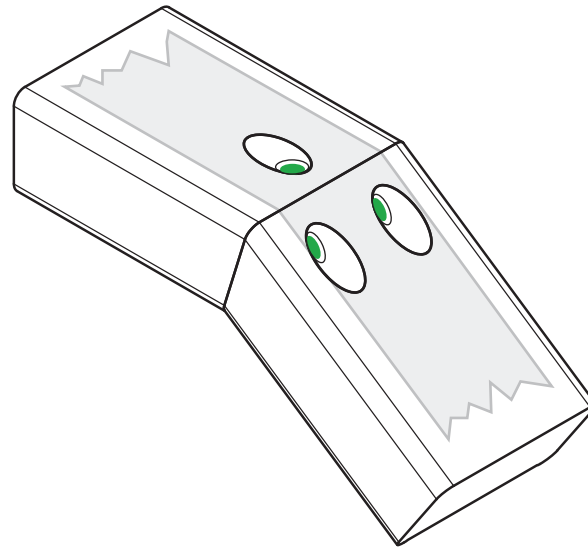
3 Using a 3/8" drill bit, create three counter sink holes on the spline. These will house the head of the screws. Drill your holes as high as possible to maximize engagement on both sides of the spline.

PRO TIP: Begin your counter sink hole by drilling perpendicular to the surface of your spline top. Once you have traction, transition to drilling parallel with the opposite side. 

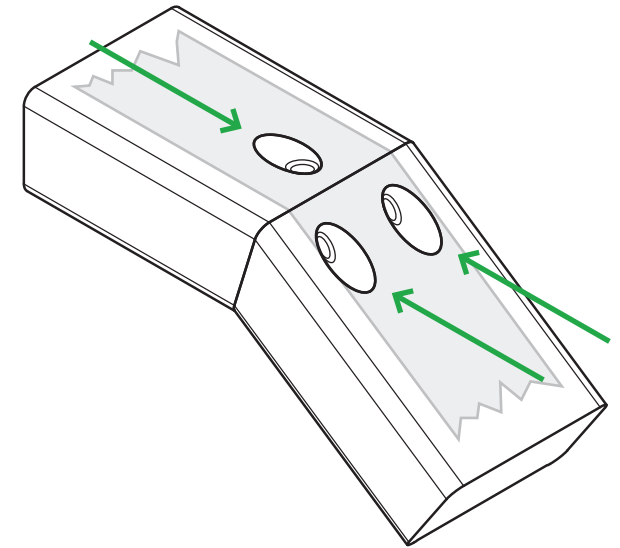
CUSTOM SPLINES



4 Check that nothing has shifted and adjust as necessary. Switch to a $5/32$ " drill bit. Drill into each counter sunk pocket parallel with the opposite side and deep enough to accommodate the unthreaded shank of each screw.



5 Finally, use a $1/8$ " bit to drill $2-1/2$ " deep through the joint and into the opposite half of the spline.



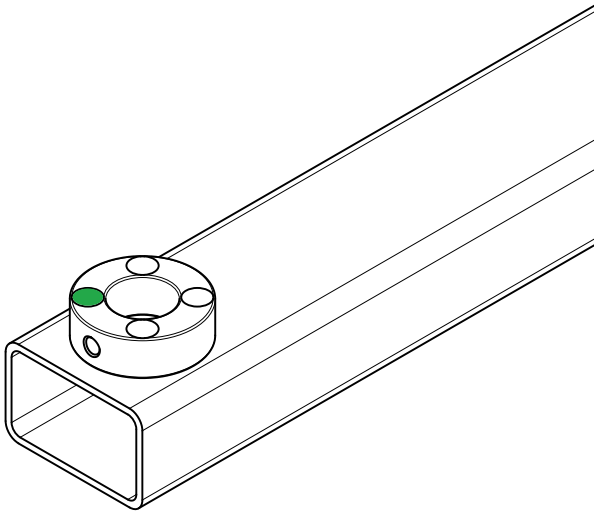
6 Using a T20 star drive bit, drive in three $2-1/2$ " deck screws. Unclamp and remove the tape.

PRO TIP: When you need to drill to a specific depth, use tape to mark that depth on your drill bit.

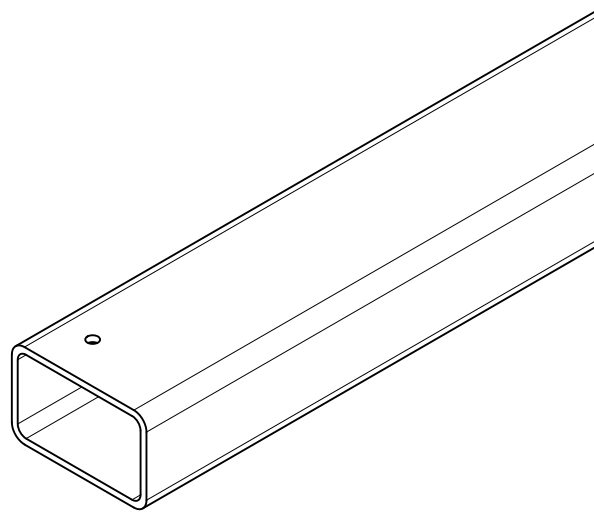


END POST TOPS

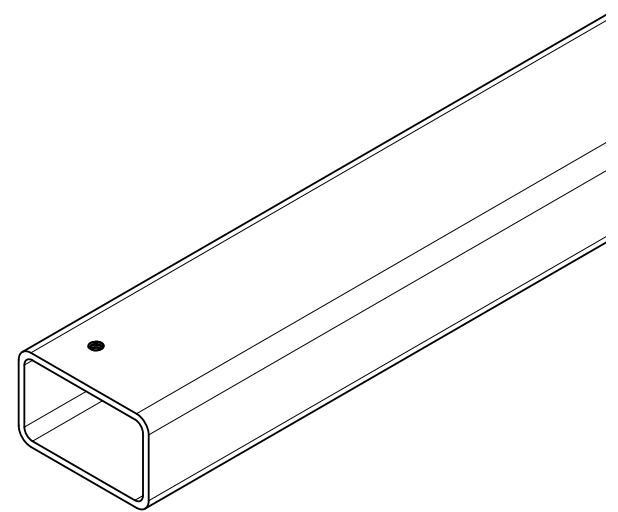
Attach handrail to end posts using Modern Tops.



1 Mark the location of the first screw hole with a 5/32" bit or a spring-loaded center punch then remove the outer collar.



2 Drill a pilot hole using the 5/32" bit.



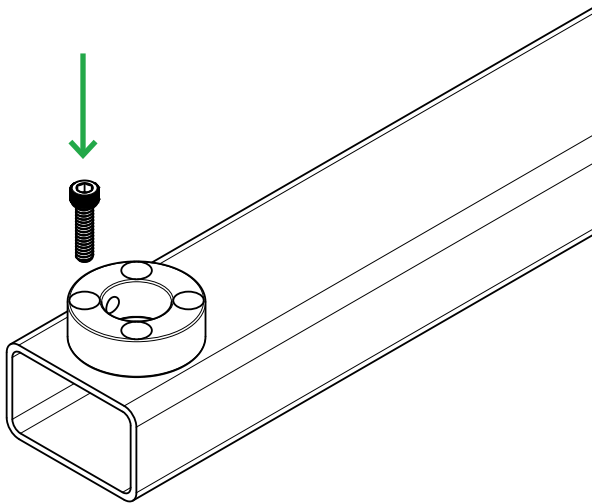
3 Tap the pilot hole using the 10-24 NC (National Course) tap. This can be done by hand using the T-handle or with a drill.

PRO TIPS:

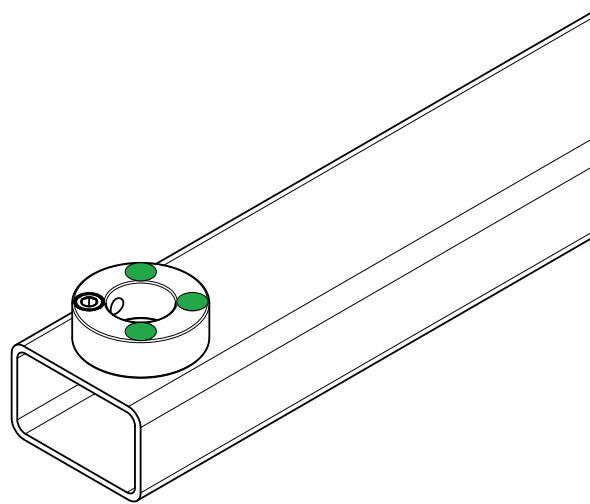
- Add some machine oil to your tap to decrease friction.
- Blow out each hole with canned air, and tap a second time for a cleaner fit.



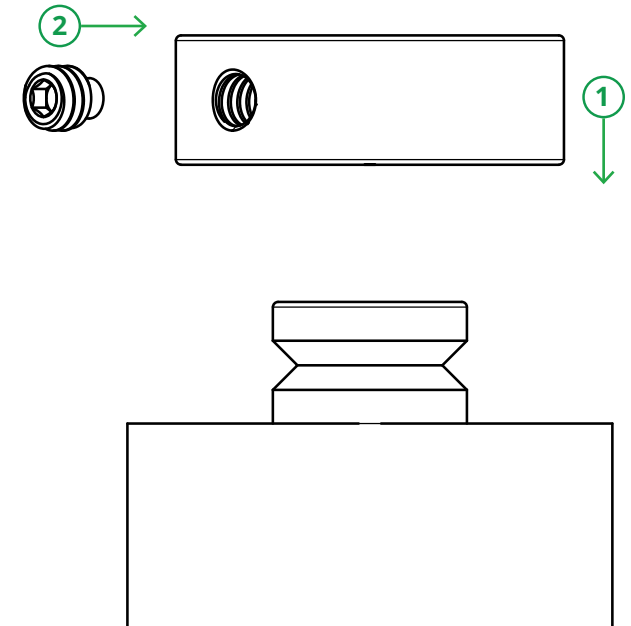
END POST TOPS



4 Replace the outer collar giving attention to how the set screw hole will be positioned for accessibility and secure it to the handrail using a Venture Series Handrail Mounting Screw and a 5/32" driver/Allen wrench.



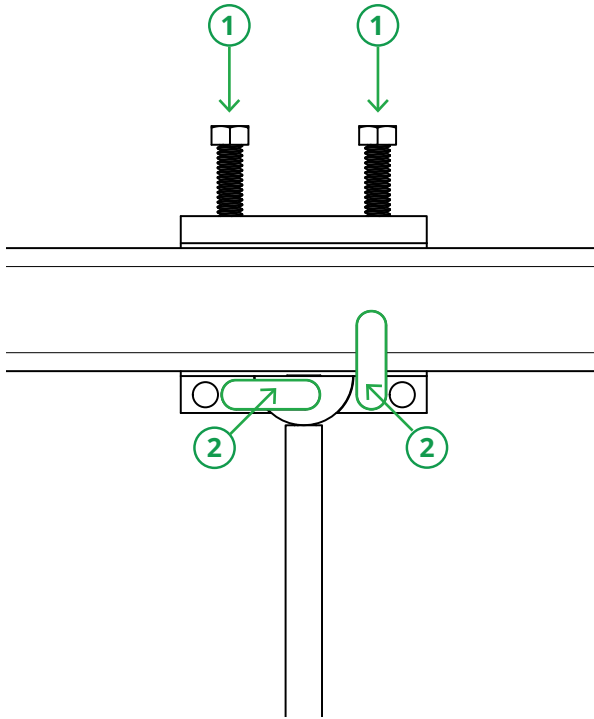
5 Drill and tap the remaining three holes through the outer collar and screw into place.



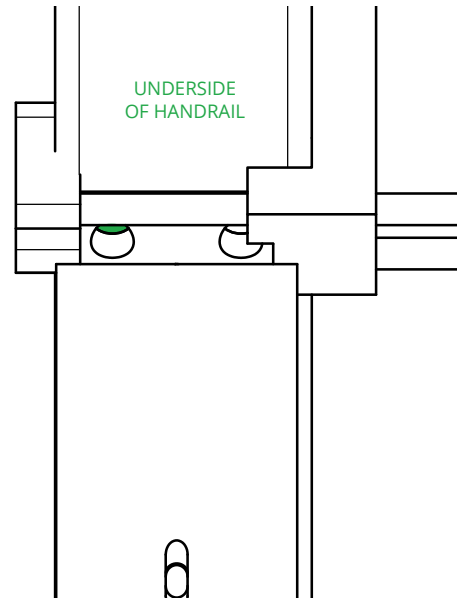
6 At the appropriate time, secure the outer collar to the center pin by re-tightening the set screw with a 1/8" Allen wrench.

INTERMEDIATE POST TOPS

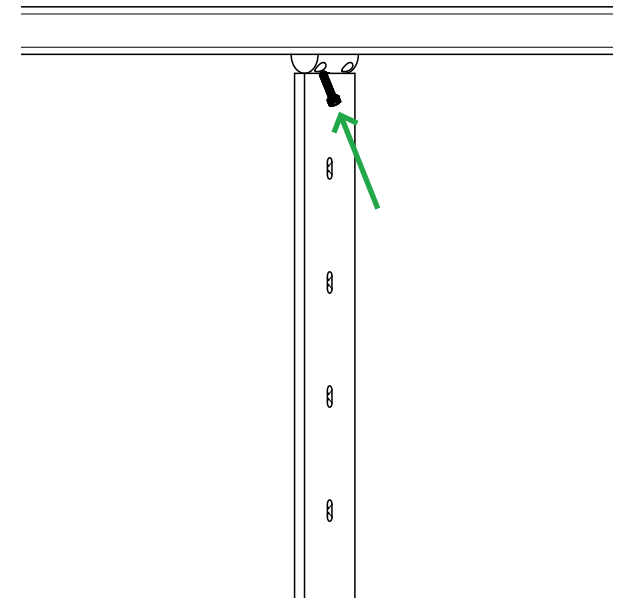
Attach handrail to both level and stair intermediate posts using Modern Tops.



1 Secure the handrail to the intermediate post top using the Handrail Clamp for Intermediate Posts. Tighten the nylon top screws first and then position and tighten one foot onto the post top and one onto the handrail.



2 Using the 5/32" drill bit and 10-24 tap, drill and tap the handrail through one of the holes on the post top.



3 Secure with one Venture Series Handrail Mounting Screw using a 5/32" driver/Allen wrench.

4 Repeat steps 1-3 on any additional intermediate posts.

5 Drill, tap, and secure all other intermediate screws after you either install a structural spline or you come to the end of your run to allow for minor adjustments if necessary.