
1.9" Round Handrail with Posts Instructions

Kit Contents:

1	3 or 4 foot straight 1.9-inch OD pipe depending on kit ordered
2	34-inch round posts with 5x5 inch welded plate
2	1.9 in OD round pipe plugs
2	Adjustable Cradle Brackets
18	1-inch Phillips countersink stainless self-drilling fasteners (cradle bracket to post, and cradle to handrail)
8	¼ inch x 4-inch Zinc threaded bolts with Zinc T nuts (Post plate to wooden surface)
8	Flat Zinc washers and Vinyl Bolt Caps
8	3-inch Zinc Concrete Wedge Bolts (Post plate to concrete surface)

Tools Required: Safety Glasses, Ear Protection, Gloves, Tape Measure, Pencil, Marker, ¼ in. Masonry Drill Bit, ¼ inch wood drill bit, 7/16 drill bit, 5/16 and 7/16 Hex Head Driver or Socket with Wrench, Phillips head drill bit, Level, Rubber Mallet, Small Can of Compressed Air, Standard Drill, Hammer Drill, and a Power Miter Saw (If cutting down pipe or posts is required for your installation)

Installation Overview Summary:

Start by setting up your posts on the stair treads or level surface walkway in the desired locations (DO NOT FASTEN), gently set the adjustable cradle brackets on the post (DO NOT FASTEN to the posts), next gently set the 1.9 in round pipe on the cradle brackets to checking the distance and alignment between posts, (DO NOT FASTEN - be sure not to let go of the pipe as the posts may fall over) you are only checking to be sure the desired set up will be sufficient for your build.

Step by step for wood and concrete surface installation:

Step 1 – Position your posts as desired on your concrete, or wooden surface, again, ensure the round pipe handrail will align the 2 posts and again will be long enough and span the distance of the post locations. Do not install posts closer than 1-3/4 inch to a wooden surface edge or no closer than 3 inches to a concrete surface edge. This is to prevent failure of the substrate surface. Distance is measured from the post plate edge.

Step 2 – (For Wood Surface Installation) Start with 1 post - A backer board such as a piece of 2x6 or 2x10 under the post placement location is required. Once position has been determined, square up the post with the surface, using a pencil - mark the location of all the post plate holes, remove post from position and drill a ¼ inch hole in all 4 marks. After holes are drilled, reposition the post and use a 7/16 hex head bit and the (4) threaded bolts with washers and T-nuts. Install a flat washer on to the bolt, insert bolt and washer into post hole through the wood deck and backer board, then thread the T nut from the underside ensuring the T nut teeth are facing up and grab on to the backer board. Tighten all 4 bolts while checking that the post is level vertically. If shimming the post is required – use stainless flat washers, or stackable plastic shims (available on our website). Once post is fastened, install the matching vinyl bolts caps, glue or silicone is recommended

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to lock the bolt cap in place. A rubber mallet may be required to gently tap the bolt caps on. Repeat the above steps for post #2 ENSURING the posts are aligned properly to ensure the round pipe handrail will mount up in the cradles appropriately. (For Concrete Surface Installation) Start with 1 post - Enlarge the post plate holes to a 5/16 diameter. Once position has been determined on the concrete step or walkway, square up the post with the surface, using a pencil - mark the location of all the post plate holes, remove the post and drill a ¼ inch hole in 1 mark location using the hammer drill and ¼ inch masonry drill bit, drill down 3-1/2 inches into the concrete. Use the can of air to blow out and clean ALL concrete dust from the hole – VERY IMPORTANT. Reposition the post and insert (1) wedge bolt in the hole, tighten halfway. Repeat the drilling and the installation of a wedge bolt one hole at a time. Ensure each hole is cleaned and insert (1) wedge bolt halfway – do this for each of the remaining 3 holes. Once all holes have been drilled and all 4 wedge bolts are inserted halfway, finish tightening each wedge bolt ensuring each wedge bolt seats to the plate – DO NOT OVER TIGHTEN. Repeat the above steps for post #2 ENSURING the posts are aligned properly to ensure the round pipe handrail will mount up in the cradles appropriately. Ensure each post is plumb and aligned. If leveling the post is required, use stainless flat washers, or plastic shims (available on our website in our online store under the posts kits and components)

For extra help, visit www.maddenmetals.com and watch our post installation video under the video tab.

Step 3 – Set Cradle Brackets on top of the round post, DO NOT FASTEN

Step 4 – Position your handrail on to the posts and cradle brackets. Check the handrail length on the posts ensuring the handrail does not need to be cut down. If the handrail requires cutting, please do that now using a power miter saw and 60 tooth or better non-ferrous metal blade. Ensure the saw blade is plumb vertically. Ensure the handrail pipe extends a minimum of 1 inch past the cradle bracket plate

Step 5 - Install the 2 pipe end plugs – ensure you Insert them evenly by gently tapping the with a rubber mallet and protective barrier such as a piece of cardboard. It's important to ensure the end plugs are installed evenly, you may need to shave some paint off the legs of the end plug to ensure a good fit – use a metal file. You can set the pipe on end; ensure you protect your deck surface and the paint of the end plug before tapping end plug into place. Once the end plugs are inserted, they are difficult to remove.

Step 6 – Set round pipe handrail in the cradle locations – keeping a hold of the pipe, position into place, using a marker or pencil, mark the hole on one cradle to the handrail. Remove the pipe from the cradle a predrill the pipe with an 1/8-inch pilot hole. Using your drill and Phillips head bit, install the (1) 1-inch self-drilling Phillips head fastener into the pipe. Next move to the other post and drill a pilot hole in the pipe, install a 1-inch Phillips head fastener into the pilot hole. Repeat for the remaining 6 locations.

Step 7 – Fasten the cradle bracket to the post, locate the 4 divots on the cradle that attaches to the post, pre-drill the divots with an 1/8 inch metal drill bit and fasten the cradle to the round pipe post using the 1-inch Phillips head self-drilling fasteners.

Maintenance: Interior and exterior - Finish maintenance is minimal, wash with a mild soap and fresh water quarterly to ensure surface is clean and free of dirt and contaminants. If using exterior in a cold climate, protect the post base and fasteners from corrosive de-icing salt if salting is used to remove ice build-up on or around sidewalks.

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