

Aluminum Interior Bike Rack

(For the Grand Design XLS 22MLE)

This rack allows you to safely, and securely, store two bikes inside your 22MLE while traveling. The advantages are that the bikes are not exposed to road debris, wind, and weather while the drawback is that it greatly limits access to the inside while traveling.

The unit is constructed from lightweight aluminum.

2 – 8' lengths of 1"x1" square aluminum channel .05" thick

2 - 8' lengths of 1/2" x 5/8" u-channel aluminum 1/16" thick

1 - 8' length of 1"x1" L – aluminum angle 1/16" thick

3/16 in. x 1/2 in. Aluminum Grip Range Rivets (50-Pack)

Dense rubber stick-on protectors

Cut the following from the 1"x1" square aluminum:

2 pieces - 60" long - Parts A & D

1 piece - 27" long – Part B

Cut the following from the 1"x1" L angle aluminum:

1 piece – 4¹/₄" long – Part G

1 piece – 4" long – Part H

8 pieces – 12" long – Parts K

12 pieces – 2³/₄" long – Parts L / wheel tray ends

Cut the following from the 1/2" x 7/8" u-channel aluminum:

1 piece – 22¹/₂" long – Part C

1 piece – 8" long – Part E

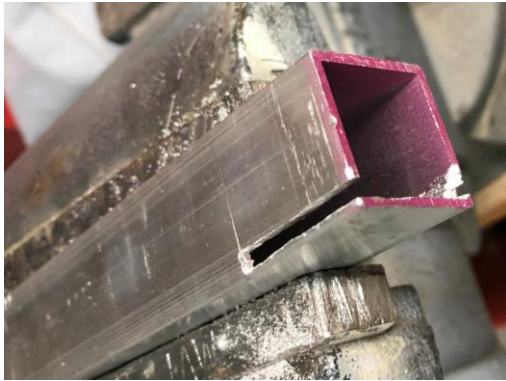
1 piece - 27" long – Part F

1 piece – 20" long – Parts I

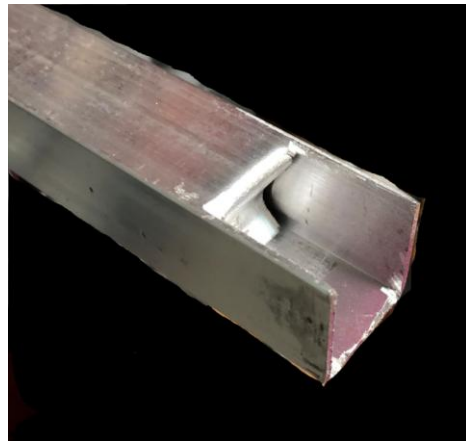
2 pieces – 24" long – Parts J

Joint – Piece A to Piece B

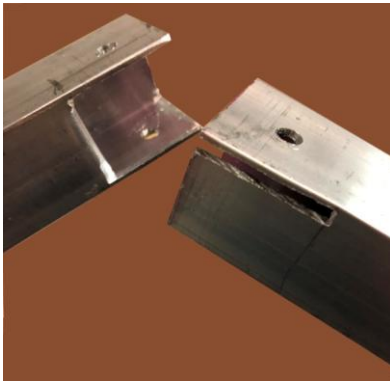
Notch one side of the left end of square stock piece A - 1" in deep as shown.



Cut the top of square stock piece B to allow it to slip into the notch of piece A.



Bend the cut tab outward 90° (I bent this one in - but bent the rest out when I realized it was a better idea.)



Piece A lies above B.

Rivet the pieces together with 3 rivets:

1 through the top.

1 through the bottom

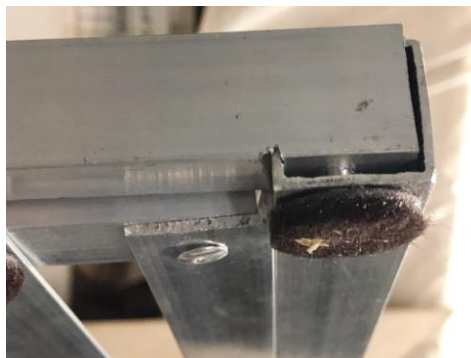
1 through the tab bent out 90°.



Joint – Piece A to Piece F & Piece C to Piece B

For A to F, Cut a 1" deep notch into the bottom side of the top end of piece F as shown. Rivet into place with 2 rivets - top and bottom. Piece F lies above A.

Piece C to Piece B is the mirror image of this.



Joint – Piece D to Piece F

Cut 1" deep notches into the bottom side of piece D to position piece F 18" from part A – inner edge to inner edge. Rivet into place with 2 rivets - top and bottom.



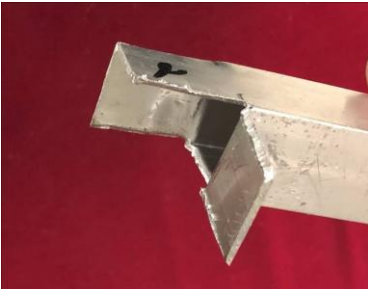
Joint – Piece E to Piece C

Simply overlap the two pieces then secure into place with rivets top and bottom.



Joint – Piece D to Piece B

Cut 1" deep notches into each corner of one end of piece D. Bend all four sides out 90°. Cut the bottom flap off. Position it 18" from part A – inner edge to inner edge. Rivet into place with 3 rivets top and sides.



Joint – Piece E to Piece D

Cut 1" deep notches into each corner of one end of piece B. Bend all four sides out 90°. Cut the bottom flap off. Position it 18½" from part A – inner edge to inner edge. Rivet into place with 3 rivets top and sides.



Joint – Piece H to Piece E

Cut 1" deep notches into each corner of one end of piece B. Bend all four sides out 90°.



Cut the bottom flap off. Position it 18½" from part A – inner edge to inner edge. Rivet into place with 3 rivets top and sides.



Joint – Piece H to Piece G

Simply overlap the two pieces then secure into place with rivets top and bottom.



Joint – Piece G to Piece D



Cut 1" deep notches into the corner of one end of piece G. Bend the side out 90°. Rivet into place with rivets top and side.

Construct the 4 tire trays.



Use two pieces of 12" long and two 2¾" long to construct each of the 4 trays as shown above. You can also flatten a 2¾" long piece to add in the middle for better strength if desired but I elected to skip that.



Rivet a tray to each side (A & B), and butted up against part G, with 3 rivets in the side and one on the end.

Attach each remaining tray to each side piece (A & B) with 3 rivets.

Measure the distance between the 2 axles on your bikes. Mine is 42". Adjust the distance for yours if different. Position them so the centers of the 2 trays on are 42" apart. (See drawings)

Supports I & J

Secure part I to pieces A and D with rivets and located half way between the two tire trays.

Secure two parts J to pieces A and D with rivets as shown.

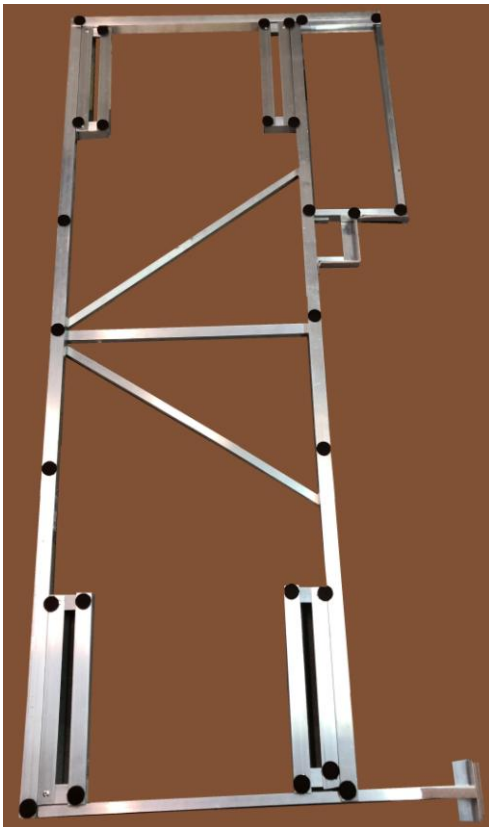
Additional Prep



You will need to cut a notch into the bottom of the sliding bathroom door to allow the rack to slide in under it. This holds this corner of the rack down.



You will need to cut and attach a small wooden block to the wall near the floor where the long end of piece F rest against the wall. This holds this corner of the rack down. The frame around my laundry box (Hack #8) served this purpose for me. These two hold the frame down to the floor for the passenger side. The other side is addressed later.



Place numerous stick-on durable furniture pads to the bottom. Be sure to place a pad over each rivet and each corner.

Place stick-on protective foam padding along the outer edges of both sides where the rack would contact the walls. You need enough thickness that it fits rather snugly between the wall and the slide.

I also coated every surface that MIGHT ever rub against anything with a spray on rubber coating.



Driver side hold downs

This requires that you open the slide a few inches to install the bike rack inside the RV. This is not a problem but some people prefer to NOT open/close the slide unnecessarily. In that case, you could manufacture a clip that would fit over the rack and under the slide.

Simply attach several flat tabs to the bottom of part A extending 1½" - 2" outward. These will fit under the slide when you bring it fully back in.

Installing the rack into place.

You may want to extend the side out an inch or two to make this all easier.

Hold the straight side of the rack top up.

Start by laying it down and placing the extended square through the bathroom opening by sliding it under the notch you placed into the door.

Once it is fully in place, bring the slide back in if you extended it.

Slide the front end tab under the slide and turn the side tab to extend under the slide to secure it down in place.



Loading your bikes.

This is not an extremely easy task.

You may wish to keep the proper tool(s) needed to allow you to turn the handlebars sideways but it is not essential to do so. This would be open end wrenches or hex allen wrenches.

The first bike goes on the right.

Take the first bike in going backward.

Be careful that you avoid rubbing/scraping anything as you place it inside to avoid scratches/rubs.



Position it so that the tires rest in the trays.

Position the pedals so that the left pedal is up as far as possible to clear the wall.

Secure each tire to the rack firmly with an adjustable ratchet strap.



Take the other bike in going forward.

Position it so that the tires rest in the trays.

Position the pedals so that the left pedal is back as far as possible to clear the wall.

Secure each tire firmly to the rack with an adjustable ratchet strap.

Lean the two bikes toward the center and against each other then use an adjustable ratchet straps to secure tightly together.



Place thick foam padding between them if they might end up rubbing. Pool noodles work very well.



Secure the final center adjustable ratchet strap all the way around the rack and both bikes.

More pics to come at a later time – file will be updated.

