

# VINYL GUNWALE REPLACEMENT (ROYALEX OR POLYETHYLENE CANOES)

**When ordering replacement vinyl gunwale be sure to request the correct length - order rails longer than your canoe.**

Canoes are measured straight down the keel line. Gunwales take a bit more circuitous route getting from end to end. Vinyl rails are available to fit canoes up to 17'6" long, depending on length of decks. All Mad River vinyl gunwales include an "L" shaped aluminum insert to add strength and structure to the rail and are pre-bent on a curve that will allow fit on a majority of canoes. Place orders for replacement gunwales through your authorized Mad River [dealer](#).

**Specify your model of canoe and hull material when ordering gunwales to ensure compatibility.**

Composite (fiberglass or Kevlar® hulls) differ in thickness from Royalex®. If you are unsure of model or material, bring your boat to the dealer, they can usually identify the model and material. If this is not practical, the serial number on your canoe will be helpful. Serial numbers are located on the right side of the stern of the hull just below the gunwale. It will either be engraved on a small brass plate or stamped directly into the hull. If difficult to read, make a rubbing by holding a piece of paper against hull and scraping a pencil point across paper. The number should be revealed on reverse side of paper.

**A complete re-rail installation will require 2 vinyl gunwales.**

Unlike ash gunwales which utilize an inside rail and an outside rail on each side, vinyl gunwales are a unibody construction in which the inside and outside gunwales are incorporated into one piece. Make sure that both gunwales include an internal "L" shaped aluminum insert.

**In most cases, the decks on vinyl-railed canoes can be saved and reused with new rails.**

This assumes the new rails have the same or similar profile and dimensions as the old rails. If you are replacing ash gunwales with vinyl, your canoe will require the addition of appropriate rotomolded decks and hardware.

**Due to their length, vinyl gunwales cannot be shipped via UPS.**

The best alternative is to arrange shipment of gunwales to accompany a shipment of boats to your local dealer.

## **MATERIALS REQUIRED: (for complete re-rail)**

2 Gunwales of adequate length

70 +/- #8 x 1" self – tapping screws (quantity needed depends on length of canoe)

8 HA/A612D Black rivets (or equivalent: Buttonhead aluminum rivets with aluminum mandrels (5/32" diameter); grip range: 3/16" to 1/4"; Hole diameter .160 to .164)

8 3/16" stainless flat washers

All above materials are available from Mad River Canoe Authorized Dealers

## **TOOLS REQUIRED:**

Rubber Mallet

Pop Rivet Gun

3/8" Wrench

7/16" Wrench

Hack Saw

Electric Drill

17/64" Drill Bit

3/8" Drill Bit

13/64" Drill Bit

6 3" C Clamps

Non permanent Marker

Duct Tape

1/8" Square Drive Bit

20' Tape Measure

Putty Knife

**NOTE:** Additional hardware and/or tools may be required to complete replacement or rehabilitation of your canoe depending upon model, material, age. Mad River has been building canoes for over 30 years and many changes and improvements have been made during that time. For example, until 1998-99, Mad Rivers' used 1/4" hardware to mount seats, yokes, etc. Since that time MRC has used 3/16" hardware to save weight and allow improvements such as double bolting yokes for increased integrity. While the instructions may specify specific drill bits, please be aware that other sizes may in fact be necessary as needed.

## **SUMMARY PROCESS**

Vinyl gunwale replacement starts with marking on the inside of the hull of the original locations for seats, yoke, thwart, carry handle, etc. Gunwales can then be removed by drilling out rivets or backing out screws used to secure them to hull.

New gunwales are then placed over the top of the edge of the hull and clamped in place. Gunwales are next marked for spacing of new fasteners. Decks are positioned in place and gunwales are drilled for rivets or secured by self-tapping screws. Outfitting components are then installed at marks made at beginning of process.

## **STEP BY STEP PROCEDURE**

1. Run tape measure along hull below gunwale and mark center point on hull. Measure gunwales to confirm they are of sufficient length to cover length of hull. Check to make sure aluminum inserts are in place inside vinyl gunwale and ends are flush. If re-rail requires removal of existing gunwales follow steps below:

1. Mark placement of seats, thwarts, and yokes on side of canoe hull with marker. This will provide a reference for replacement of these parts when new gunwales are installed.
2. Mark original rivet or screw locations on hull below gunwale. When fastening new rails in place these marks will serve to space new rivet locations. It is preferable to use new holes rather than enlarge the existing holes with the new rails. Enlarged holes can result in rails becoming slightly loose over time.
3. If original gunwales are secured by rivets, drill out rivets using properly sized drill bit. Older Mad River Canoe gunwale rivets can be removed by using a 13/64" drill bit. Drill bit should be same diameter as the rivet shank. Drill from outside hull positioning end of drill bit in center of rivet head. Drill until flange of rivet head separates from rivet stem. It may be necessary to poke rivet stem through hull to dislodge rivet.
4. For wooden gunwales: Back out screws, starting at one end of hull and proceeding towards other end and continuing down other gunwale to return to end where started.
5. Drill or unscrew fasteners securing the decks to the canoe.
6. When all fasteners are free, pry up on decks and remove. This should also free gunwales along hull. On wooden gunwales, outwale will drop free when final fasteners are removed.

2. Place decks onto hull, making sure inside of end of deck fits snugly against the outside of stem of canoe. Tamp with rubber mallet to seat properly. With a pencil, mark outside of the hull at rear edge of the deck on both sides. Also mark point on deck defining how much overlap of deck over gunwale will occur. Remove decks after making marks.

3. Run tape measure along top edge of hull following outside surface of hull. Start measure at the mark defining end of gunwales under the deck overlap and measure to mark at opposite end defining same location. Double check measurement as this will be length you will cut new gunwales.

4. Cut new gunwales to measurement made in step 3. Mark center point on each new gunwale.  
5. Position new gunwale on hull, matching center point marked on hull to point marked on gunwale. Narrow side of gunwale goes to the outside of the hull and wide side to inside to provide mounting point for hanging seats, thwarts, and yokes. Start at center and push gunwale fully down onto hull, working towards one end. Tamp gunwale down with mallet to fully seat onto top of hull and use clamps to hold gunwale down in place. Once you have one end on hull, return to center and work towards the other end. You may find that slipping a putty knife up under edge of

gunwale will help it slide over the top of hull. You can also use duct tape to help hold the gunwale down. Leave about the last 3' of the gunwale free to be able to be raised.

6. Lift the ends of the gunwales from the hull and insert into decks until ends of deck are close to marks made on hull in step 2. Lower the gunwales onto hull and allow end of deck to fit over stem of canoe. Tamp end of deck back onto hull and over rails until end of deck is aligned with marks on hull. Tape deck firmly down onto top of hull with duct tape.

7. Step back and "eyeball" the gunwale. Look for any rises or humps that would indicate gunwale is not seated completely on hull. Tamp down and secure any section of rail necessary.

8. Along gunwale sections, refer to the marks locating the original rivet locations. Place evenly spaced marks between old rivet locations. These will be locations for new fasteners. It is not recommended to use original hardware locations.

9. At decks, mark point on the outside edge of the deck 1" from point where gunwale is inserted. Make next mark 3" towards end of canoe from first mark. Move to end of canoe and make a mark 1" from end of deck. Make a fourth mark 2" from tip of deck. Repeat on other side of deck. This will provide 4 fasteners (2 self-tapping screws and 2 rivets) on each side of deck. Check to make sure that the two marks at wide end of deck are positioned to engage the overlap of the deck and the gunwale. If necessary, adjust position slightly to engage both gunwale and deck.

10. Confirm that gunwales are firmly seated against top of canoe hull. Beginning at center of hull, insert self-tapping square drive screw onto drive bit and place tip in groove running down center of gunwale flange on the outside of hull. Drive screw through flange, hull, and into interior gunwale box. Be careful not to drive head of screw through the flange. If this occurs, back screw out and install a flat washer on screw and re-drive or reposition screw to new location.

11. Working towards one end of canoe, drive screws at each marked location, pressing down on top of gunwale at each position to make sure it is fully seated on hull.

12. When you reach the deck, drive self-tapping screws at marks where deck overlaps gunwale.

13. Return to center and proceed to fasten other half of gunwale in same fashion.

14. Repeat for gunwale on opposite side of hull.

15. Install 13/64" bit on drill and drill through each deck at remaining two marks on each side.

16. Insert rivet into each remaining hole. Place flat washer over end of rivet on inside of canoe and push washer flat against inside of hull.

17. Place rivet gun over shank of rivet and pull trigger. Make sure to keep head of gun pushed firmly up against outside of deck to get best attachment.

18. Using marks on hull as reference, re-hang seats, thwarts, yokes, etc. Drill 1/4" holes through top of gunwale placing point of drill bit along indented seam in top of gunwale. Use existing hardware. (If hardware was damaged during removal, replacements can be obtained from authorized Mad River Canoe dealers.)

19. Tighten hardware snugly. Do not over-tighten.

20. Wipe off marks on hull used to locate seats and hardware.

If additional information is required, contact your Authorized Mad River Canoe Dealer or call Mad River Customer Service @ 888/ 525-2925.

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