Kayak Maintenance and Repair

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Routine Maintenance

Wash/ rinse your kayak with water regularly. If paddling in salt water, this should be done after every trip. The ferrule of your take-apart paddle should also be rinsed thoroughly to keep sand and salt from jamming and corroding your paddle. (All kayaking gear should be rinsed in freshwater after being used on saltwater.)

Get rid of sand especially around the footbraces and in the skeg box. These parts will be most likely to jam up if they get a lot of sand in them. Use a spray nozzle on your hose or vacuum out loose, dry sand. Make sure there are no stones stuck in the skeg box. If the skeg is jammed, use a pliers to pull the skeg down. Don't try to force the slider to drop the skeg. You may kink the cable that runs through the hull from the slider to the skeg. Do not apply a lubricant to the footbraces, rudder, etc. It will be more likely to attract more sand and grit causing more problems. Lubricants are usually not necessary on a kayak if the parts are kept clean and in good repair.

Use a UV inhibitor to protect your kayak's hull from sunlight damage. For plastic kayaks, use 303 or McNett UV Tech. For fiberglass kayaks, use a good car wax with a UV inhibitor or a fiberglass polish like Gel Gloss. 303 should be applied to all rubber/vinyl surfaces on your kayak such as hatch covers to prevent UV breakdown.

Store your kayak properly to avoid deformities in rotomolded polyethylene hulls. A poly kayak should ideally rest on its side with support being positioned under or close to the bulkheads when possible. Second choice would be to rest the kayak upside down on its deck. Shorter kayaks can be stood up vertically. Fiberglass/ Kevlar and thermoformed polycarbonate boats can be stored right side up on the hull as these materials do not readily deform under the effects of weight or heat. Do not hang a kayak horizontally from the grab handles/carrying toggles. This can cause a poly kayak hull to deform into a banana shape, and many grab handles are not strong enough to hold the weight of the kayak for extended periods of time. The handles will likely break or pull out of the deck of the kayak.

Periodically inspect the entire kayak for the following items that may need to be repaired/ replaced:

- Look for loose nuts/ bolts and tighten.
- Check bulkheads for leaks and caulk as necessary using Lexel or Marine (or Sportsman's) Goop.
- Check for frayed/ weak bungees, deck lines, and grab loops. Replace if needed.
- Make sure that knots holding the grab loops and deck lines are secure.
- Inspect rudder cords and cables for fraying/ damage. Replace when damage is visible.
- Make sure rubber hatch covers are not cracked or neoprene hatch covers torn.

Repairs

Surface scratches: Rotomolded polyethylene – generally requires no repair. You can shave off loose pieces of plastic with a sharp utility knife or ski scraper. Apply 303 or UV Tech. Fiberglass/ Kevlar with gel-coat finish – use a mildly abrasive automotive polishing/ rubbing compound to buff out small scratches. Use a fine grit wet/ dry sandpaper for deeper scratches (start with 600 grit and higher). The higher the grit number, the smoother and shinier the finish on the boat will be. Use plenty of water while sanding to keep the sandpaper from getting clogged by gelcoat.

Gel-coat chips: Any chips in which the woven fiberglass/ Kevlar cloth is visible should be repaired right away. Use a utility knife or Dremel tool to clean out loose pieces of gel-coat and to fair the edges of the area to be repaired. If using a Dremel tool, be careful not to apply downward pressure that would grind through the fiberglass cloth. After preparing the edges, clean the area thoroughly with Acetone and let dry. Mix gel-coat paste with coloring agent to match the area needing repair. If you can get gelcoat colorant from the manufacturer of your kayak, that will eliminate the need for you to do color matching which can be rather difficult to do well. It is usually not necessary to do this if you are patching the white hull of a kayak. Add a few drops of hardener per instructions on the gel-coat paste and mix the hardener thoroughly through the gel-coat paste to make sure the paste will cure (harden). Add a colloidal silica thickener if necessary. Apply gel-coat to the repair area. Place a piece of wax paper or acetate over the area if it is small and smooth the repair through the wax paper. Leave the wax paper in place overnight until the repaired area hardens. The wax paper will peel off cleanly after the gel-coat has hardened. Use high grit wet-dry sandpaper and

plenty of water to sand the area smooth. Repairs to gel-coat cracks are done the same way, but you will need to ream out the crack first in order to have space to apply the gelcoat paste.

Oxidized gelcoat: Polishing with a product like Gel Gloss can take out minor oxidation on a fibergalss kayak. When oxidation has progressed beyond what can be polished out, you will need to do some wet sanding before doing your polishing. Use a medium-grit (600) wet/dry sandpaper with water to sand off the surface layer of oxidation. Sand a second time with a higher fine-grit wet/dry sandpaper (800 or higher). After sanding, rinse off the boat very well with water and dry the surface with a clean towel. You are now ready to polish the gelcoat using a fine-grit polishing compound. You can use a buffer or do the polishing by hand.

Cracks in thermoformed polycarbonate plastics (TCS, Carbonlite, Airalite, etc.): Use super glue/ airplane model glue to glue the edges of the crack back together. Apply a layer of fiberglass cloth on the inside of the kayak behind the crack to give structural support to the cracked area after gluing the edges back together. Sand the area where you will apply the fiberglass patch. Clean with mineral spirits. Apply epoxy to the area and stick the fiberglass cloth to the epoxy. Continue to saturate the cloth with the remaining epoxy until the fiberglass cloth appears clear. Additional layers of fiberglass can be added over the original patch when the epoxy is feeling tacky (before it has completely hardened) to give the area more support if needed. Since these materials are proprietary to each kayak manufacturer, it may be advisable to check with the manufacturer to see if there is a particular epoxy or adhesive that they recommend to use for applying the fiberglass cloth.

Holes in rotomolded polyethylene: This is not an easy do-it-yourself project. Most adhesives and epoxies will not adhere well to polyethylene. Luckily it is rarely necessary to do these kinds of repairs. Look for G-Flex epoxy from West Systems, Plastex 3000 (http://plastex.home), Urethane Pro Kayak & Canoe Welder w/ green rods from ArizonaTools.com (http://www.arizonatools.com/tools/plastic-welders-rods-and-plastic-adhesives/detail/UREKCWPRO/ There is an article by Brian Day in the April 2006 issue of Sea Kayaker magazine explaining how to use the KC Welder to repair a polyethylene kayak.

Cracks or holes in fiberglass/ Kevlar kayaks: For do-it-yourself projects on Kevlar hulls, use fiberglass to make the patches. It is very difficult to cut Kevlar cloth and it does not sand easily. Use West Systems 105 Resin and 205 hardener. You can buy small foil packets of pre-measured resin and hardener which work very well for small repair jobs, and the shelf life of the resin and hardener is very good. A 6-pack of foil packets will cost between $20-25. Sand the area to be repaired. Work from the inside of the kayak if at all possible to make a more cosmetically appealing repair. You may need to do a gelcoat repair to the exterior after doing the fiberglass repair on the interior. After sanding, clean the area with acetone and let dry. Mix epoxy and hardener according to directions and make sure that the hardener is thoroughly mixed through the epoxy. Apply a small amount of epoxy to the area so the fiberglass cloth will stick. Then use the remaining epoxy to saturate the cloth. Use a putty knife or similar tool to squeegee the excess epoxy out of the cloth and the repair area. It is not advantageous to have a thick layer of epoxy. It does not cure as well, adds excess weight, and may be brittle. Add additional layers of cloth one at a time when the epoxy is partially cured and feels tacky to the touch. If the epoxy is fully cured before adding the next layer, you will need to sand and prepare the surface as you did for the initial layer of cloth. If the epoxy is still tacky, the next layer can be applied over the top with another layer of new resin and hardener and a chemical bond will form between the older and newer layers of epoxy. After the final layer of fiberglass and epoxy has hardened, you can sand the area smooth to finish the repair. If the crack is especially large or the damage to the boat was extensive, you may need to apply fiberglass to both the interior and exterior of the kayak in order to give the repaired hull adequate structural strength. You can still apply gel-coat over the top of the repair when you are finished, but there will probably always be a noticeable bulge in the area where fiberglass was applied to the outside of the kayak.

Damage to wooden boats, gunwales, paddles: Damage to the finish of wooden boats, boat parts, or paddles such as scratches should be sanded using a medium grit sand paper. The sanded area should then be varnished or oiled depending on the original finish surrounding the damaged area. Many canoe gunwales and canoe paddle grips are oiled with a tung oil. For varnished surfaces, look for a marine grade varnish that is made to withstand immersion in water. Between light coats of varnish, sand the surface lightly with a medium to fine grit sandpaper. Following the final coat of varnish, you can do a light sanding with a very fine grit sandpaper to smooth the surface and remove any burrs or sharp edges that would scratch your hands (especially important on paddle grips and canoe gunwales).

Repair Kits

Emergency On-water Kit (carried in pocket of PFD)
10 feet of Gorilla Tape (very sticky duct tape)
1 garbage bag (or large square of heavy mil plastic)
1-2 large elastic bands (used to secure the opening of a garbage bag around the lip of a trash can)
4-6 plastic zip ties (wire ties)
Hand moldable marine epoxy putty (PC-Marine is one manufacturer of this kind of product)

Larger Trip Kit (carried in a waterproof container inside the kayak)
Leatherman-style multitool with pliers, wire cutters, and flat/Phillips-head screwdrivers
additional pliers or 4" Vise-Grips pliers
2-part expoxy in pre-measured foil packets* (West Systems 105 Resin/205 Hardener)
mixing cup and stick*
1-2 square feet of fiberglass cloth (6-10oz cloth)*
alcohol prep pads
1" disposable brush
scissors
Packtowl
sandpaper
vinyl gloves
matches or lighter
stainless steel screws, washers, and lock nuts in sizes used on your boat
extra rudder or skeg cable
bailing wire
wire cable swages for crimping rudder cables
hog rings for crimping bungee cords together
nylon cordage in a couple different diameters (2mm and 4mm)
spare bungee cord (matching diameter of deck lines or carry thinner 1/8" diameter just to make temporary repairs)
Gorilla tape or duct tape
several heavy duty garbage bags
assorted zip ties (wire ties)
Aquaseal
Sportsman's Goop or Marine Goop
1"-wide nylon straps
replacement buckles and ladder locks to fit on 1"-wide nylon straps
heavy duty sewing needle with waxed sewing cord or dental floss

Repairs at Home
Dremel tool
caulking gun
dust masks
acetone (should not be used to clean up catalyst)
rubbing alcohol
mineral spirits
wax paper
box of vinyl gloves
disposable brushes
masking tape
release cloth
safety glasses
paper towels
disposable sleeves or old long-sleeve shirts

Resources

Book - Knapp, Andy. *The Optimum Kayak.* Ragged Mountain Press, 2000.
Book - Johnson, Shelley. *The Complete Sea Kayaker's Handbook.* Ragged Mountain Press, 2002.
West Systems Publication #002-550 - Fiberglass Boat Repair & Maintenance
DVD – Wenonah/ Current Designs Repair Video, www.wenonah.com
DVD - West System Epoxy How-To DVD - available through West Systems dealers
Website – http://www.westsystem.com (West System epoxies)
Website - http://www.fibreglast.com/content.php?URLID=123&trksrc=FreeInfo (Fibre Glast Developments Corporation)

Products Mentioned in the Presentation
303 Protectant (http://www.303products.com/)
McNett UV Tech - (http://www.mcnett.com/UV-Tech-Protectant-Rejuvenator-P330.aspx)
Gel Gloss - (http://gel-gloss.com/index.php?pageId=351)
PC-Marine Hand Moldable Epoxy Putty - waterproof (http://www.pcepoxy.com)
West Systems 105 Resin/ 205 Hardener
West Systems G-Flex Epoxy (look for the thickened version, cures underwater)
Plastex 3000 (http://plastex.home)
Urethane Pro Kayak & Canoe Welder (http://www.arizonatools.com/tools/plastic-welders-rods-and-plastic-adhesives/detail/UREKCWPRO/)
Lexel - (http://www.sashcosealants.com/home_improvement/Lexel.aspx)
Marine Goop or Sportsman's Goop - (http://www.eclecticproducts.com/marine.htm)
http://www.sealectdesigns.com (boat hardware)

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