

## CANOE CARE & MAINTENANCE

Today's canoes are constructed of some down right amazing materials when it comes to durability and the ability to withstand abuse and the ability to do so while requiring only a minimum of care and upkeep. Think about it for a moment. Can you think of another product that can provide such long term, high quality performance in often abusive conditions and yet require so little maintenance? Kayaks are about the only other product that comes to mind.

This remarkable ability of modern materials to not only survive but actually perform in a challenging and often hostile environment and come out looking none the worse for wear has resulted in the perception that these boats are nigh indestructible. This faith in the capabilities of these materials often translates to the concept that they are maintenance-free as well.

To a large degree, this is true. A boat that can survive the hazards posed by a ripping river can also survive abuse by neglect. However, it remains a simple truth that no material is indestructible and that quality and integrity will diminish over time whether from constant or repetitive exposure to rocks and gravel, to use, to environmental conditions such as UV exposure, or simply due to the passage of time.

A little "TLC" will go a long way to keep your boat in top form. With today's materials, that TLC often takes the form of pre-emptive preventative care and common sense. Given the small demand for upkeep these materials place on their users, you'll find that a few minutes spent devoted to your boat are not a burden, considering the return. It's indisputable that the development of modern materials has been as instrumental as design advances in opening up waters previously considered unpaddleable. It follows that we are going to be best served by maintaining these materials to keep them at their best especially when one considers the potential consequences of a hull failure in places you wouldn't consider going without confidence in just how tough your boat is.

So, if you recognize that it is in part the amazing capabilities of our modern hull materials that lets you paddle and play with an attitude bordering on immunity, it follows that there's wisdom in protecting these materials. They don't ask much from us and for that we should be grateful, especially considering what they make possible.

### Proactive Care & Feeding

Much of the preventative care you provide your canoe will start with how you store it when not in use, considering the unfortunate reality that we spend more time out of our boats rather than in them. Proper storage will involve protecting your canoe from moisture, UV light, and temperature extremes wherever possible.

### Proper Canoe Storage

1) **Store canoe gunwales down on appropriate supports or slings.** Make sure gunwales or decks are not in contact with ground or floor. Two supports, evenly spaced, are adequate and desirable. Any point of contact between gunwales and support will collect and hold moisture. Sawhorses or web slings suspended from ceiling joists work well.

2) **Do not store canoe right side up with hull resting on supports or slings.** Overtime, weight of canoe can result in creases, dents, or deformations occurring in the hull aligned with the supports. Polyethylene is the material most susceptible to this type of damage but Royalex and composite hulls can also be adversely affected as well.

3) **Do not store canoe by leaning it on its side or against a wall.** This can result in the hull flattening out on the weight bearing side over time. Hull materials of all kinds can suffer this kind of damage.

4) **Store indoors if possible, out of reach of sun and rain or extreme temperature.** It may sound strange, but moisture is your canoe's worst enemy when it comes to storage, followed closely by UV light. If you have a canoe with wooden gunwales, see below for info on protection.

5) **If outdoor storage is necessary, covering the boat with a waterproof tarp is preferable, IF the cover is not placed in direct contact with the hull.** Moisture in the form of condensation can collect between the hull and cover and degrade the hull and deteriorate the hull finish. It's best if there is no contact between hull and cover but that can be difficult to accomplish. A gap of 6-8" is adequate to provide appropriate ventilation. Positioning a wood support between hull and cover is a workable way to achieve this. Make sure cover is taut enough to resist sagging under weight of snow or rain and that water running off cover does not drain onto canoe or gunwales.

6) **Even if your canoe has synthetic gunwales it is important to make sure that the ends of the canoe are covered.** If the end of the boat is exposed, water can drain down between the gunwale or deck and collect. In winter, it can freeze and damage the hull or gunwale systems or weaken the connection between gunwales and hull.

7) **If it is not practical to cover your boat, try to store your boat on a slight incline.** This will encourage water to run off the hull and drain away. Some canoes have drain holes drilled in the ends of their decks. Check to see if your boat is so equipped and if not, consider drilling a small hole in the deck to provide drainage. Drill hole from top of deck so that it penetrates inside of the hull. Try to locate your boat so that it will not be exposed to leaves and sap from trees which can discolor and stain your hull.

8) **For successful long term storage, give your boat a little TLC before putting it away.** Clean and protect the hull with a UV Protectant, treat the gunwales with appropriate materials, etc. These attentions will help protect your boat while in storage and it'll be ready to go right to the water when the time comes.

### Cold Crack Prevention

Royalex canoes with wood gunwales stored in extremely cold climates are susceptible to cold cracks. Cold cracks are the result of contraction of the hull due to cooling in opposition to the wood gunwale maintaining or actually slightly expanding. Cold cracks usually run vertically and are often centered at the screws securing the gunwales to the hull.

Most manufacturers take steps to minimize the possibility of cold cracks but if you store your boat in cold conditions, you might be wise to take a few more simple precautionary steps.

1) Back out each gunwale screw several turns to relieve pressure at hull attachment points.

2) Completely back out screws securing the decks and the first 2 gunwale screws behind the decks.

3) Carefully lift the gunwale system (both outwales, inwales and attached decks) above the top of the hull and insert a 1" thick board between top edge of hull and gunwales.

## HULL MAINTENANCE

All modern hull materials are quite care-free. Polyethylene and Royalex hulls are the least maintenance intensive whereas composite hulls will require a bit more care.

Proper hull care comes down to proactive and reactive maintenance. Proactive or preventative care consists of the attention you give your canoe prior to use and would include regularly scheduled maintenance. Reactive care is the stuff you do to respond to something that has happened while the boat is in use, say repairing or touching up a scratch or dent.

### Proactive Care

Probably the single most useful maintenance you can provide your hull is to keep it clean. Simply hosing the hull down after use is beneficial in that it will help remove any trapped or lodged sand or grit which if left in place can abrade the hull the next time it's in use. Washing down the hull also gives you an opportunity to look it over for any signs of damage or excessive wear.

You don't want to use an abrasive cleanser on a canoe hull. Polyethylene and Royalex are both relatively soft materials that can be easily scored by a gritty cleaner. An abrasive cleanser will also scratch and dull the gel coat finish of composite canoes.

The best cleaners for canoe hulls are paste based. They tend to be more concentrated than liquid cleaners for more cleaning power and apply without abrading the finish. And since it's likely you'll be cleaning your boat out of doors, for the environment's sake, please use a biodegradable cleaner.

A logical next step once you've got your hull clean is to protect the clean finish from UV degradation. Prolonged UV exposure degrades any material to one degree or another. Fabrics and materials become brittle and fade. Fortunately, UV protection is not difficult or time-consuming and involves applying a surface protectant to the hull. Most protectants work in a sacrificial manner, applied to the material surface and absorbing the brunt of the sun's impact while protecting the surface underneath.

A protectant particularly well suited for application to all hull materials used in canoes today is 303 Protectant. It is very effective and it utilizes a water based formulation whereas many other protectants which are silicone based. There's no question which is the more environmentally friendly material. It also does not result in as slippery a surface after application.

Protectants offer both cosmetic and structural benefits. They will remove oxidized surfaces, restoring depth and luster to hull finishes while protecting the material from degradation and maintaining the material's flexibility and resilience. Protectants also work their "magic" on other pieces of gear and equipment such as flotation bags, dry bags, and PFDS, not to mention a wide variety of around the home applications as well.

303 applies in much the same manner as other protectants. It's neither difficult nor time consuming.

### Applying UV Protectants

- 1) Rinse hull and wipe or allow to dry.
- 2) Apply protectant to hull one section at a time. Spray on and wipe onto hull evenly.
- 3) Allow to set for a minute or so.
- 4) Wipe off with a dry, clean cloth.
- 5) Complicated, isn't it?

More of an issue is how frequently you should apply a protectant. It all comes down to two primary factors: use and exposure. Both will wear off the protective surface layer on the hull. If you put your hull to a lot of use and it's stored out of doors, a monthly application of protectant is not out of the question. Physical abrasion suffered by whitewater boats will also require more frequent renewal of the protectant.. If you paddle less frequently or on calmer deeper waters and your boat lives indoors, an application every other month or so will suffice.

It's an indication of how care-free modern canoe hull materials that that is the short list on preventative or proactive maintenance.

You can take another step and improve your boat's survivability by anticipating likely damage by installing protective additions such as Kevlar felt skid plates on the ends of your canoe.

It's somewhat ironic that as strong as materials like Royalex and polyethylene are, they are the weakest in the one area of the hull that suffers the highest percentage of wear, stress, and damage. Royalex and the most appropriate type of polyethylene construction feature an expanded "foam" core. The amount of expansion available to this core is limited as the hull material makes the tight curve to form the stems of your boat. The result is a less resilient hull structure, one that is not as resistant of impact and one that does not rebound as well after the impact. A high degree of abrasion is experienced in this area as well.

Skid plates are, in effect, armor for the ends of your boat. They form a stiff, strong, hard plate that deflects impact and shrugs off abrasion. If you know your paddling will frequently take you into considerable whitewater, you might as well install skids now rather than later. It's both easier and more reliable to apply skid plates to a clean new hull than to a hull that's been damaged or scarred. For a skid plate to be effective, you want 100% skid to hull contact.

If skid plates make sense to you, it's critical to match the appropriate skid plate to your hull material. Skid kits use different adhesives or resins for best results with differing hull materials. A kit designed for Royalex or composite canoes is not likely to work well on polyethylene. Also, the Kevlar felts cut to fit the blunter ends of thermo-formed canoes are wider than needed for the fine stems of composite boats. This will result in a blunter end, detracting from the boat's paddling efficiency.

### Reactive Maintenance

This could be called after-the-fact maintenance. After the deed is done, now what do I do?

Most damage that's done on to canoe hulls is superficial, scratches, dents, gouges, chips, etc. Reactive maintenance starts with the ability to determine what damage is superficial and can be tolerated and let be and what constitutes structural damage that should be addressed with immediate repair.

The most common damage suffered will be scratching of the hull. Scratches can be cuts or they can be an abrasion. (a concentration of scratches in a limited area). On Royalex and polyethylene hulls, due to the nature of the material, scratches have to be pretty extensive or exceptionally deep to be really noticeable. On composite hulls, on the other hand, gel coat, regardless of color will scratch out white, painfully visible especially on dark colors.

#### Appraising the damage:

Composite Hulls: Look for cracked or chipped gel coat in or next to the scratch. If you see spider web lines in the

gel coat or there are pieces of gel coat missing, you're in line for a gel coat repair. Press with your thumbs on the hull around the scratch. If the area immediately around the scratch is measurably more flexible than the area around it, you may have suffered some structural damage.

If you don't see any signs of additional damage but you can't live with the scratches, wet sand the hull, starting with 220 grit sandpaper and moving quickly to 400 grit and finally 600 grit. Keep paper and hull soaked, you can't use too much water for best results. Touch up paints are available to blend repaired area with original hull. If you have an isolated scratch that won't lend itself to sanding, one thing you can do to soften the appearance of the scratch is to rub a little gunwale oil onto the scratch. This will darken the scratch and blend it with your hull.

Polyethylene & Royalex Hulls: Dents or gouges are more common than scratches with Royalex or "poly" boats. Inspect the area, looking for any signs of penetration into sub layers under the surface. In Royalex canoes, the appearance of a second color indicates that the outer surface has worn through, exposing the ABS substrata. You want to cover this exposure as ABS is very susceptible to UV degradation, turning stiff and brittle. Touch up paint is a fast effective means to accomplish this as long as you realize that it is not a permanent solution. If penetration reveals the innermost foam or foam like core, structural repair will be required.

If it's a matter of "makin' pretty," take a sharp knife and cut off any raised feathers or strips of hull material that have been cut or raised as the result of damage. This will protect the remaining hull surface from lifting or being pulled up. You can also sometimes heat out dents using a hair dryer or with care a heat gun. Pass heat back and forth over hull without contacting the hull while pushing out on inside of hull.

## CARE & MAINTENANCE OF GUNWALES

### Vinyl Gunwales

A periodic application of a UV Protectant is just about all the care needed. Be aware that the protectant will make the gunwales slippery until it has dried.

### Aluminum Gunwales

It's best to keep them clean and to avoid sliding them against other surfaces whenever possible. Aluminum gunwales are usually either powder coated or anodized to provide a more durable outer surface. Either treatment can be abraded away. Again, the result is usually more of a cosmetic issue than structural. If you do wear off part of the surface coating of the gunwale, lightly sand the surface exposed with a fine grit sandpaper and paint with an epoxy based paint, applied in multiple thin coats.

### Wood Gunwales

By far, the most care-intensive but also the most cosmetically appealing.

Penetrating oil finishes are more effective in protecting long, skinny, flexible wood gunwales compared to varnish. Varnish is a surface coat and is relatively brittle and stiff. Flexing in a gunwale will create hairline cracks in the varnish finish allowing moisture penetration.

Wood will weather to a gray finish as they are exposed to the environment. This color change is the first step in a gunwale's deterioration and if caught early is only a cosmetic issue. If allowed to persist, it will turn into rot and we all knows what that means.

Fortunately, restoring the original oiled finish to your gunwales is not difficult, time consuming, or expensive. You'll need fine grit sandpaper, masking tape, and some dry rags in addition to your oil. If it's been awhile since your gunwales have gotten any attention you might find some medium grit sandpaper necessary.

#### Wood Gunwale Refinishing

- 1) Make sure gunwales are dry. Place boat on saw horses or similar supports, gunwales up. Run tape along each side of hull below gunwales.
- 2) Sand tops and sides of gunwales until gray surface finish is removed and surface is smooth. When you sand your decks, try to sand with the wood grain, not against it.
- 3) Wet out the sanded surface of the gunwales with oil, using rag or foam brush. Allow to sit for 3-5 minutes. Re-wet any sections where oil is fully absorbed into wood.
- 4) If you're in a hurry, you can wipe off excess oil and move on. If you'd like to create the best looking and longest lasting finish, take some 400 grit sandpaper, wet it with oil, and wet sand the gunwales. The force and heat generated will help force the oil deeper into the wood structure and also create more of a satin finish. After wet sanding, wipe off any excess oil.
- 5) Turn boat over, placing pad or cushion where gunwales will contact supports. Proceed to treat the under side of the gunwales in same manner as described above. Make sure you treat the inwale and underside of decks thoroughly. Use caution when sanding not to penetrate the masking tape and damaging the hull finish.
- 6) Once job is complete, remove masking tape and step back and admire your work.

#### Taking care of other wood parts

Components such as seats, thwarts, yokes are normally varnished and upkeep usually amounts to occasional touch ups for areas that get dinged or hit. Areas that might require a little more attention are the cane portions of seats where repetitive flex can deteriorate the varnish coating and any cut ends or drilled holes created in installing or changing any components. Newly exposed surfaces can be protected either with varnish or oil.